UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-Q

☒ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the Quarterly Period Ended: June 30, 2023

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

Commission File Number 001-34506

TWO HARBORS INVESTMENT CORP.

(Exact Name of Registrant as Specified in Its Charter)

Maryland	**27-0312904**
(State or Other Jurisdiction of Incorporation or Organization)	(I.R.S. Employer Identification No.)
1601 Utica Avenue South, Suite 900 **St. Louis Park, Minnesota**	**55416**
(Address of Principal Executive Offices)	(Zip Code)

(612) 453-4100
(Registrant's Telephone Number, Including Area Code)

Securities Registered Pursuant to Section 12(b) of the Act:

Title of Each Class:	Trading Symbol(s)	Name of Exchange on Which Registered:
Common Stock, par value $0.01 per share	TWO	New York Stock Exchange
8.125% Series A Cumulative Redeemable Preferred Stock	TWO PRA	New York Stock Exchange
7.625% Series B Cumulative Redeemable Preferred Stock	TWO PRB	New York Stock Exchange
7.25% Series C Cumulative Redeemable Preferred Stock	TWO PRC	New York Stock Exchange

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☒	Accelerated filer	☐
Non-accelerated filer	☐	Smaller reporting company	☐
		Emerging growth company	☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒

As of July 27, 2023, there were 96,166,187 shares of outstanding common stock, par value $0.01 per share, issued and outstanding.

TWO HARBORS INVESTMENT CORP.

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PART I. FINANCIAL INFORMATION

Item 1. Financial Statements

TWO HARBORS INVESTMENT CORP.
CONDENSED CONSOLIDATED BALANCE SHEETS
(in thousands, except share data)

	June 30, 2023	December 31, 2022
ASSETS	(unaudited)	
Available-for-sale securities, at fair value (amortized cost $9,278,950 and $8,114,627, respectively; allowance for credit losses $5,360 and $6,958, respectively)	$ 8,963,203	$ 7,778,734
Mortgage servicing rights, at fair value	3,273,956	2,984,937
Cash and cash equivalents	699,081	683,479
Restricted cash	322,603	443,026
Accrued interest receivable	39,700	36,018
Due from counterparties	248,607	253,374
Derivative assets, at fair value	16,469	26,438
Reverse repurchase agreements	289,288	1,066,935
Other assets	157,092	193,219
Total Assets (1)	$ 14,009,999	$ 13,466,160
LIABILITIES AND STOCKHOLDERS' EQUITY		
Liabilities:		
Repurchase agreements	$ 9,067,824	$ 8,603,011
Revolving credit facilities	1,455,421	1,118,831
Term notes payable	398,653	398,011
Convertible senior notes	267,791	282,496
Derivative liabilities, at fair value	14,976	34,048
Due to counterparties	267,050	541,709
Dividends payable	55,675	64,504
Accrued interest payable	120,504	94,034
Commitments and contingencies (see Note 15)	—	—
Other liabilities	146,096	145,991
Total Liabilities (1)	11,793,990	11,282,635
Stockholders' Equity:		
Preferred stock, par value $0.01 per share; 100,000,000 shares authorized and 25,578,232 and 26,092,050 shares issued and outstanding, respectively ($639,456 and $652,301 liquidation preference, respectively)	618,579	630,999
Common stock, par value $0.01 per share; 175,000,000 shares authorized and 96,165,535 and 86,428,845 shares issued and outstanding, respectively	962	864
Additional paid-in capital	5,824,509	5,645,998
Accumulated other comprehensive loss	(309,086)	(278,711)
Cumulative earnings	1,476,462	1,453,371
Cumulative distributions to stockholders	(5,395,417)	(5,268,996)
Total Stockholders' Equity	2,216,009	2,183,525
Total Liabilities and Stockholders' Equity	$ 14,009,999	$ 13,466,160

(1) The condensed consolidated balance sheets include assets and liabilities of consolidated variable interest entities, or VIEs. At June 30, 2023 and December 31, 2022, assets of the VIEs totaled $472,108 and $497,921, and liabilities of the VIEs totaled $465,860 and $453,952, respectively. See Note 3 - *Variable Interest Entities* for additional information.

The accompanying notes are an integral part of these condensed consolidated financial statements.

TWO HARBORS INVESTMENT CORP.
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS) (unaudited)
(in thousands, except share data)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	**2022**	**2023**	**2022**
Interest income:				
Available-for-sale securities	$ 104,195	$ 55,399	$ 201,233	$ 100,046
Other	13,567	1,604	33,122	1,803
Total interest income	117,762	57,003	234,355	101,849
Interest expense:				
Repurchase agreements	116,946	19,269	221,301	27,612
Revolving credit facilities	29,684	9,106	55,340	14,782
Term notes payable	8,239	3,925	15,882	7,181
Convertible senior notes	4,692	4,801	9,528	9,843
Total interest expense	159,561	37,101	302,051	59,418
Net interest (expense) income	(41,799)	19,902	(67,696)	42,431
Other income (loss):				
Gain (loss) on investment securities	2,172	(197,719)	12,970	(250,061)
Servicing income	175,223	157,526	328,543	294,152
Gain (loss) on servicing asset	21,679	85,557	(6,400)	496,181
Gain (loss) on interest rate swap and swaption agreements	56,533	32,734	(25,621)	(5,307)
Gain (loss) on other derivative instruments	47,161	(101,273)	(108,610)	(203,035)
Other income (loss)	2,200	(73)	2,200	(117)
Total other income (loss)	304,968	(23,248)	203,082	331,813
Expenses:				
Servicing expenses	25,190	22,991	53,556	47,695
Compensation and benefits	8,868	11,019	22,951	23,212
Other operating expenses	11,886	9,152	22,370	15,777
Total expenses	45,944	43,162	98,877	86,684
Income (loss) before income taxes	217,225	(46,508)	36,509	287,560
Provision for income taxes	19,780	25,912	15,872	74,710
Net income (loss)	197,445	(72,420)	20,637	212,850
Dividends on preferred stock	(12,115)	(13,748)	(24,480)	(27,495)
Gain on repurchase and retirement of preferred stock	2,454	—	2,454	—
Net income (loss) attributable to common stockholders	$ 187,784	$ (86,168)	$ (1,389)	$ 185,355
Basic earnings (loss) per weighted average common share	$ 1.94	$ (1.00)	$ (0.02)	$ 2.14
Diluted earnings (loss) per weighted average common share	$ 1.80	$ (1.00)	$ (0.02)	$ 2.02
Dividends declared per common share	$ 0.45	$ 0.68	$ 1.05	$ 1.36
Weighted average number of shares of common stock:				
Basic	96,387,877	86,069,431	94,492,389	86,034,722
Diluted	106,062,378	86,069,431	94,492,389	96,085,473

The accompanying notes are an integral part of these condensed consolidated financial statements.

TWO HARBORS INVESTMENT CORP.
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS) (unaudited), continued
(in thousands, except share data)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	**2022**	**2023**	**2022**
Comprehensive income (loss):				
Net income (loss)	$ 197,445	$ (72,420)	$ 20,637	$ 212,850
Other comprehensive loss:				
Unrealized loss on available-for-sale securities	(156,306)	(4,211)	(30,375)	(336,056)
Other comprehensive loss	(156,306)	(4,211)	(30,375)	(336,056)
Comprehensive income (loss)	41,139	(76,631)	(9,738)	(123,206)
Dividends on preferred stock	(12,115)	(13,748)	(24,480)	(27,495)
Gain on repurchase and retirement of preferred stock	2,454	—	2,454	—
Comprehensive income (loss) attributable to common stockholders	$ 31,478	$ (90,379)	$ (31,764)	$ (150,701)

The accompanying notes are an integral part of these condensed consolidated financial statements.

TWO HARBORS INVESTMENT CORP.
CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY (unaudited)
(in thousands)

	Preferred Stock	Common Stock Par Value	Additional Paid-in Capital	Accumulated Other Comprehensive Income (Loss)	Cumulative Earnings	Cumulative Distributions to Stockholders	Total Stockholders' Equity
Balance, December 31, 2021	$ 702,550	$ 860	$ 5,627,758	$ 186,346	$ 1,212,983	$ (4,986,544)	$ 2,743,953
Net income	—	—	—	—	285,270	—	285,270
Other comprehensive loss before reclassifications	—	—	—	(323,490)	—	—	(323,490)
Amounts reclassified from accumulated other comprehensive income	—	—	—	(8,355)	—	—	(8,355)
Other comprehensive loss	—	—	—	(331,845)	—	—	(331,845)
Issuance of common stock, net of offering costs	—	—	323	—	—	—	323
Preferred dividends declared	—	—	—	—	—	(13,747)	(13,747)
Common dividends declared	—	—	—	—	—	(58,811)	(58,811)
Non-cash equity award compensation	—	—	4,161	—	—	—	4,161
Balance, March 31, 2022	702,550	860	5,632,242	(145,499)	1,498,253	(5,059,102)	2,629,304
Net loss	—	—	—	—	(72,420)	—	(72,420)
Other comprehensive loss before reclassifications	—	—	—	(141,843)	—	—	(141,843)
Amounts reclassified from accumulated other comprehensive income	—	—	—	137,632	—	—	137,632
Other comprehensive loss	—	—	—	(4,211)	—	—	(4,211)
Issuance of common stock, net of offering costs	—	—	82	—	—	—	82
Preferred dividends declared	—	—	—	—	—	(13,748)	(13,748)
Common dividends declared	—	—	—	—	—	(58,844)	(58,844)
Non-cash equity award compensation	—	1	3,460	—	—	—	3,461
Balance, June 30, 2022	$ 702,550	$ 861	$ 5,635,784	$ (149,710)	$ 1,425,833	$ (5,131,694)	$ 2,483,624
Balance, December 31, 2022	$ 630,999	$ 864	$ 5,645,998	$ (278,711)	$ 1,453,371	$ (5,268,996)	$ 2,183,525
Net loss	—	—	—	—	(176,808)	—	(176,808)
Other comprehensive income before reclassifications	—	—	—	62,709	—	—	62,709
Amounts reclassified from accumulated other comprehensive income	—	—	—	63,222	—	—	63,222
Other comprehensive income	—	—	—	125,931	—	—	125,931
Issuance of common stock, net of offering costs	—	102	177,627	—	—	—	177,729
Preferred dividends declared	—	—	—	—	—	(12,365)	(12,365)
Common dividends declared	—	—	—	—	—	(58,381)	(58,381)
Non-cash equity award compensation	—	1	6,051	—	—	—	6,052
Balance, March 31, 2023	630,999	967	5,829,676	(152,780)	1,276,563	(5,339,742)	2,245,683
Net income	—	—	—	—	197,445	—	197,445
Other comprehensive loss before reclassifications	—	—	—	(156,306)	—	—	(156,306)
Amounts reclassified from accumulated other comprehensive income	—	—	—	—	—	—	—
Other comprehensive loss	—	—	—	(156,306)	—	—	(156,306)
Repurchase and retirement of preferred stock	(12,420)	—	—	—	2,454	—	(9,966)
Issuance of common stock, net of offering costs	—	—	149	—	—	—	149
Repurchase of common stock	—	(6)	(7,050)	—	—	—	(7,056)
Preferred dividends declared	—	—	—	—	—	(12,115)	(12,115)
Common dividends declared	—	—	—	—	—	(43,560)	(43,560)
Non-cash equity award compensation	—	1	1,734	—	—	—	1,735
Balance, June 30, 2023	$ 618,579	$ 962	$ 5,824,509	$ (309,086)	$ 1,476,462	$ (5,395,417)	$ 2,216,009

The accompanying notes are an integral part of these condensed consolidated financial statements.

TWO HARBORS INVESTMENT CORP.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS (unaudited)
(in thousands)

	Six Months Ended June 30,	
	2023	**2022**
Cash Flows From Operating Activities:		
Net income	$ 20,637	$ 212,850
Adjustments to reconcile net income to net cash provided by operating activities:		
Amortization of premiums and discounts on investment securities, net	15,826	55,287
Amortization of deferred debt issuance costs on term notes payable and convertible senior notes	1,307	1,265
(Reversal of) provision for credit losses on investment securities	(119)	1,651
Realized and unrealized (gains) losses on investment securities	(12,851)	248,410
Loss (gain) on servicing asset	6,400	(496,181)
Realized and unrealized loss on interest rate swaps and swaptions	32,684	300
Unrealized gains on other derivative instruments	(17,055)	(92,309)
Gain on repurchase of convertible senior notes	(2,201)	—
Equity based compensation	7,787	7,622
Net change in assets and liabilities:		
Increase in accrued interest receivable	(3,682)	(3,988)
Decrease in deferred income taxes, net	12,229	74,710
Increase in accrued interest payable	26,470	3,444
Change in other operating assets and liabilities, net	24,003	5,134
Net cash provided by operating activities	111,435	18,195
Cash Flows From Investing Activities:		
Purchases of available-for-sale securities	(3,111,690)	(7,295,928)
Proceeds from sales of available-for-sale securities	1,575,796	4,339,148
Principal payments on available-for-sale securities	318,194	687,642
Purchases of mortgage servicing rights, net of purchase price adjustments	(297,273)	(538,432)
Proceeds from sales of mortgage servicing rights	1,854	—
(Purchases) short sales of derivative instruments, net	(338)	39,895
(Payments for termination and settlement) proceeds from sales and settlement of derivative instruments, net	(24,394)	160,024
Payments for reverse repurchase agreements	(1,306,894)	(1,135,374)
Proceeds from reverse repurchase agreements	2,084,541	1,111,085
(Decrease) increase in due to counterparties, net	(269,892)	1,246,227
Net cash used in investing activities	$ (1,030,096)	$ (1,385,713)

The accompanying notes are an integral part of these condensed consolidated financial statements.

TWO HARBORS INVESTMENT CORP.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS (unaudited), continued
(in thousands)

	Six Months Ended June 30,	
	2023	**2022**
Cash Flows From Financing Activities:		
Proceeds from repurchase agreements	$ 19,769,476	$ 17,611,046
Principal payments on repurchase agreements	(19,304,663)	(17,309,244)
Proceeds from revolving credit facilities	349,000	410,000
Principal payments on revolving credit facilities	(12,410)	(5,000)
Repurchase/repayment of convertible senior notes	(13,169)	(143,774)
Repurchase and retirement of preferred stock	(9,966)	—
Proceeds from issuance of common stock, net of offering costs	177,878	405
Repurchase of common stock	(7,056)	—
Dividends paid on preferred stock	(24,730)	(27,495)
Dividends paid on common stock	(110,520)	(117,476)
Net cash provided by financing activities	813,840	418,462
Net decrease in cash, cash equivalents and restricted cash	(104,821)	(949,056)
Cash, cash equivalents and restricted cash at beginning of period	1,126,505	2,088,670
Cash, cash equivalents and restricted cash at end of period	$ 1,021,684	$ 1,139,614
Supplemental Disclosure of Cash Flow Information:		
Cash paid for interest	$ 259,721	$ 43,363
Cash paid (received) for taxes, net	$ 2,736	$ (11)
Noncash Activities:		
Dividends declared but not paid at end of period	$ 55,675	$ 72,591

The accompanying notes are an integral part of these condensed consolidated financial statements.

TWO HARBORS INVESTMENT CORP.

Notes to the Condensed Consolidated Financial Statements (unaudited)

Note 1. Organization and Operations

Two Harbors Investment Corp. is a Maryland corporation that, through its wholly owned subsidiaries (collectively, the Company), invests in and manages Agency residential mortgage-backed securities, or Agency RMBS, mortgage servicing rights, or MSR, and other financial assets. Agency refers to a U.S. government sponsored enterprise, or GSE, such as the Federal National Mortgage Association (or Fannie Mae) or the Federal Home Loan Mortgage Corporation (or Freddie Mac), or a U.S. government agency such as the Government National Mortgage Association (or Ginnie Mae). The investment portfolio is managed as a whole and resources are allocated and financial performance is assessed on a consolidated basis. The Company's common stock is listed on the NYSE under the symbol "TWO".

On August 2, 2022, Matrix Financial Services Corporation, or Matrix, a wholly owned subsidiary of the Company, entered into a definitive stock purchase agreement to acquire RoundPoint Mortgage Servicing LLC (formerly RoundPoint Mortgage Servicing Corporation), or RoundPoint, from Freedom Mortgage Corporation. In connection with the acquisition, Matrix has agreed to pay a purchase price upon closing in an amount equal to the tangible net book value of RoundPoint, plus a premium amount of $10.5 million, subject to certain additional post-closing adjustments. In connection with the transaction, RoundPoint will divest its retail origination business as well as its RPX servicing exchange platform. Matrix also agreed to engage RoundPoint as a subservicer prior to the closing date and began transferring loans to RoundPoint in the fourth quarter of 2022. Upon closing, all servicing licenses and operational capabilities will remain with RoundPoint, and RoundPoint will become a wholly owned subsidiary of Matrix. The parties expect to close the transaction in 2023, subject to the satisfaction of customary closing conditions and the receipt of required regulatory and GSE approvals.

The Company has elected to be treated as a real estate investment trust, or REIT, as defined under the Internal Revenue Code of 1986, as amended, or the Code, for U.S. federal income tax purposes. As long as the Company continues to comply with a number of requirements under federal tax law and maintains its qualification as a REIT, the Company generally will not be subject to U.S. federal income taxes to the extent that the Company distributes its taxable income to its stockholders on an annual basis and does not engage in prohibited transactions. However, certain activities that the Company may perform may cause it to earn income which will not be qualifying income for REIT purposes. The Company has designated certain of its subsidiaries as taxable REIT subsidiaries, or TRSs, as defined in the Code, to engage in such activities.

Note 2. Basis of Presentation and Significant Accounting Policies

Consolidation and Basis of Presentation

The interim unaudited condensed consolidated financial statements of the Company have been prepared in accordance with the rules and regulations of the Securities and Exchange Commission, or the SEC. Certain information and note disclosures normally included in financial statements prepared in accordance with U.S. generally accepted accounting principles, or U.S. GAAP, have been condensed or omitted according to such SEC rules and regulations. However, management believes that the disclosures included in these interim condensed consolidated financial statements are adequate to make the information presented not misleading.

The condensed consolidated financial statements of the Company include the accounts of all subsidiaries; inter-company accounts and transactions have been eliminated. All trust entities in which the Company holds investments that are considered variable interest entities, or VIEs, for financial reporting purposes were reviewed for consolidation under the applicable consolidation guidance. Whenever the Company has both the power to direct the activities of a trust that most significantly impact the entities' performance, and the obligation to absorb losses or the right to receive benefits of the entities that could be significant, the Company consolidates the trust. Certain prior period amounts have been reclassified to conform to the current period presentation. All per share amounts, common shares outstanding and common equity-based awards for all prior periods reflect the Company's one-for-four reverse stock split effected on November 1, 2022 at 5:01 p.m. Eastern Time (refer to Note 16 - *Stockholders' Equity* for additional information). The accompanying condensed consolidated financial statements should be read in conjunction with the financial statements and notes thereto included in the Company's Annual Report on Form 10-K for the year ended December 31, 2022. In the opinion of management, all normal and recurring adjustments necessary to present fairly the financial condition of the Company at June 30, 2023 and results of operations for all periods presented have been made. The results of operations for the three and six months ended June 30, 2023 should not be construed as indicative of the results to be expected for future periods or the full year.

TWO HARBORS INVESTMENT CORP.

Notes to the Condensed Consolidated Financial Statements (unaudited)

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make a number of significant estimates. These include estimates of fair value of certain assets and liabilities, amount and timing of credit losses, prepayment rates, and other estimates that affect the reported amounts of certain assets and liabilities as of the date of the condensed consolidated financial statements and the reported amounts of certain revenues and expenses during the reported period. It is likely that changes in these estimates (*e.g.*, valuation changes due to supply and demand in the market, credit performance, prepayments, interest rates, or other reasons) will occur in the near term. The Company's estimates are inherently subjective in nature and actual results could differ from its estimates and the differences may be material.

Significant Accounting Policies

Included in Note 2 to the Consolidated Financial Statements of the Company's 2022 Annual Report on Form 10-K is a summary of the Company's significant accounting policies.

Recently Issued and/or Adopted Accounting Standards

Facilitation of the Effects of Reference Rate Reform on Financial Reporting

The London Interbank Offered Rate, or LIBOR, has been used extensively in the U.S. and globally as a "benchmark" or "reference rate" for various commercial and financial contracts, including corporate and municipal bonds and loans, floating rate mortgages, asset-backed securities, consumer loans, and interest rate swaps and other derivatives. On March 5, 2021, Intercontinental Exchange Inc. announced that ICE Benchmark Administration Limited, the administrator of LIBOR, intended to stop publication of the majority of USD-LIBOR tenors on June 30, 2023. In the U.S., the Alternative Reference Rates Committee, or ARRC, has identified the Secured Overnight Financing Rate, or SOFR, and, in some cases, the forward-looking term rate based on SOFR published by CME Group Benchmark Administration Limited, or Term SOFR, plus, in each case, a recommended spread adjustment, as its preferred alternative rates for U.S. dollar-based LIBOR. SOFR is a measure of the cost of borrowing cash overnight, collateralized by U.S. Treasury securities, and is based on directly observable U.S. Treasury-backed repurchase transactions. Numerous industry wide and company-specific transitions as it relates to derivatives and cash markets exposed to LIBOR were completed in connection with its phase-out on June 30, 2023.

In March 2020, the FASB issued Accounting Standards Update (ASU) No. 2020-04, which provides temporary optional expedients and exceptions on accounting for contract modifications and hedging relationships for the purpose of the replacement of LIBOR with another reference rate. The guidance also provides a one-time election to sell held-to-maturity debt securities or to transfer such securities to the available-for-sale or trading category. The Company's material contracts that are or were indexed to USD-LIBOR have been amended to transition to an alternative benchmark, where necessary. Any other unmodified agreements that incorporate LIBOR as the referenced rate either (i) already had provisions in place that provide for an alternative to LIBOR upon its phase-out, (ii) matured or (iii) were terminated prior to June 30, 2023. The ASU was effective immediately for all entities and expires after December 31, 2024. The Company's adoption of this ASU did not have an impact on the Company's financial condition, results of operations or financial statement disclosures.

Note 3. Variable Interest Entities

The Company enters into transactions with subsidiary trust entities that are established for limited purposes. One of the Company's subsidiary trust entities, MSR Issuer Trust, was formed for the purpose of financing MSR through securitization, pursuant to which, through two of the Company's wholly owned subsidiaries, MSR is pledged to MSR Issuer Trust and in return, MSR Issuer Trust issues term notes to qualified institutional buyers and a variable funding note, or VFN, to one of the subsidiaries, in each case secured on a pari passu basis. The Company has one repurchase facility that is secured by the VFN, which is collateralized by the Company's MSR.

Another of the Company's subsidiary trust entities, Servicing Advance Receivables Issuer Trust, was formed for the purpose of financing servicing advances through a revolving credit facility, pursuant to which Servicing Advance Receivables Issuer Trust issued a VFN backed by servicing advances pledged to the financing counterparty.

Both MSR Issuer Trust and Servicing Advance Receivables Issuer Trust are considered VIEs for financial reporting purposes and were reviewed for consolidation under the applicable consolidation guidance. As the Company has both the power to direct the activities of the trusts that most significantly impact the entities' performance, and the obligation to absorb losses or the right to receive benefits of the entities that could be significant, the Company is the primary beneficiary and, thus, consolidates the trusts. Additionally, in accordance with arrangements entered into in connection with the securitization transaction and the servicing advance revolving credit facility, the Company has direct financial obligations payable to both MSR Issuer Trust and Servicing Advance Receivables Issuer Trust, which, in turn, support MSR Issuer Trust's obligations to noteholders under the securitization transaction and Servicing Advance Receivables Issuer Trust's obligations to the financing counterparty.

The following table presents a summary of the assets and liabilities of all consolidated trusts as reported on the condensed consolidated balance sheets as of June 30, 2023 and December 31, 2022:

(in thousands)	June 30, 2023	December 31, 2022
Note receivable [(1)]	$ 398,653	$ 398,011
Restricted cash	23,712	31,691
Accrued interest receivable [(1)]	445	400
Other assets	49,298	67,819
Total Assets	$ 472,108	$ 497,921
Term notes payable	$ 398,653	$ 398,011
Revolving credit facilities	43,050	23,850
Accrued interest payable	768	560
Other liabilities	23,389	31,531
Total Liabilities	$ 465,860	$ 453,952

(1) Receivables due from a wholly owned subsidiary of the Company to the trusts are eliminated in consolidation in accordance with U.S. GAAP.

Additionally, as discussed in Note 1 - *Organization and Operations*, the Company has entered into a definitive stock purchase agreement to acquire RoundPoint whereby the purchase price will be subject to an adjustment based on RoundPoint's aggregate "earnings" (as defined in the agreement) from October 1, 2022 through the closing date, or the Interim Period, in addition to other post-closing adjustments. The manner in which the purchase price is calculated represents an implicit guarantee of the value of RoundPoint's net book value, in which the Company holds the variable interests. These terms also indicate that RoundPoint meets the criteria to be considered a VIE that the Company must review for consolidation. As the Company has the obligation to absorb losses and the right to receive benefits of RoundPoint during the Interim Period that could be significant, but not the power to direct the activities of RoundPoint that most significantly impacts its performance, the Company is not the primary beneficiary and, thus, does not consolidate RoundPoint.

Note 4. Available-for-Sale Securities, at Fair Value

The Company holds both Agency and non-Agency available-for sale, or AFS, investment securities which are carried at fair value on the condensed consolidated balance sheets. The following table presents the Company's AFS investment securities by collateral type as of June 30, 2023 and December 31, 2022:

(in thousands)	June 30, 2023	December 31, 2022
Agency:		
Federal National Mortgage Association	$ 5,251,614	$ 4,112,556
Federal Home Loan Mortgage Corporation	3,554,055	3,332,314
Government National Mortgage Association	69,726	208,706
Non-Agency	87,808	125,158
Total available-for-sale securities	$ 8,963,203	$ 7,778,734

At June 30, 2023 and December 31, 2022, the Company pledged AFS securities with a carrying value of $8.9 billion and $7.4 billion, respectively, as collateral for repurchase agreements. See Note 11 - *Repurchase Agreements*.

At June 30, 2023 and December 31, 2022, the Company did not have any securities purchased from and financed with the same counterparty that did not meet the conditions of ASC 860, *Transfers and Servicing*, to be considered linked transactions and, therefore, classified as derivatives.

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The Company is not required to consolidate VIEs for which it has concluded it does not have both the power to direct the activities of the VIEs that most significantly impact the entities' performance, and the obligation to absorb losses or the right to receive benefits of the entities that could be significant. The Company's investments in these unconsolidated VIEs include all non-Agency securities, which are classified within available-for-sale securities, at fair value on the condensed consolidated balance sheets. As of June 30, 2023 and December 31, 2022, the carrying value, which also represents the maximum exposure to loss, of all non-Agency securities in unconsolidated VIEs was $87.8 million and $125.2 million, respectively.

The following tables present the amortized cost and carrying value of AFS securities by collateral type as of June 30, 2023 and December 31, 2022:

	June 30, 2023							
(in thousands)	Principal/ Current Face	Un-amortized Premium	Accretable Purchase Discount	Amortized Cost	Allowance for Credit Losses	Unrealized Gain	Unrealized Loss	Carrying Value
Agency:								
Principal and interest	$ 9,048,410	$ 183,314	$ (80,080)	$ 9,151,644	$ —	$ 3,377	$ (309,519)	$ 8,845,502
Interest-only	781,081	39,157	—	39,157	(5,087)	992	(5,169)	29,893
Total Agency	9,829,491	222,471	(80,080)	9,190,801	(5,087)	4,369	(314,688)	8,875,395
Non-Agency	1,175,430	7,829	(359)	88,149	(273)	786	(854)	87,808
Total	$ 11,004,921	$ 230,300	$ (80,439)	$ 9,278,950	$ (5,360)	$ 5,155	$ (315,542)	$ 8,963,203

	December 31, 2022							
(in thousands)	Principal/ Current Face	Un-amortized Premium	Accretable Purchase Discount	Amortized Cost	Allowance for Credit Losses	Unrealized Gain	Unrealized Loss	Carrying Value
Agency:								
Principal and interest	$ 7,781,277	$ 189,246	$ (33,413)	$ 7,937,110	$ —	$ 6,310	$ (325,960)	$ 7,617,460
Interest-only	963,866	45,882	—	45,882	(6,785)	1,890	(4,871)	36,116
Total Agency	8,745,143	235,128	(33,413)	7,982,992	(6,785)	8,200	(330,831)	7,653,576
Non-Agency	1,263,789	8,511	(225)	131,635	(173)	545	(6,849)	125,158
Total	$ 10,008,932	$ 243,639	$ (33,638)	$ 8,114,627	$ (6,958)	$ 8,745	$ (337,680)	$ 7,778,734

The following table presents the Company's AFS securities according to their estimated weighted average life classifications as of June 30, 2023:

	June 30, 2023		
(in thousands)	Agency	Non-Agency	Total
< 1 year	$ 1,161	$ —	$ 1,161
≥ 1 and < 3 years	21,249	—	21,249
≥ 3 and < 5 years	67,701	79,900	147,601
≥ 5 and < 10 years	8,162,712	4,118	8,166,830
≥ 10 years	622,572	3,790	626,362
Total	$ 8,875,395	$ 87,808	$ 8,963,203

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Measurement of Allowances for Credit Losses on AFS Securities

The Company uses a discounted cash flow method to estimate and recognize an allowance for credit losses on both Agency and non-Agency AFS securities that are not accounted for under the fair value option. The following tables present the changes for the three and six months ended June 30, 2023 and 2022 in the allowance for credit losses on Agency and non-Agency AFS securities:

	Three Months Ended June 30, 2023			Six Months Ended June 30, 2023		
(in thousands)	Agency	Non-Agency	Total	Agency	Non-Agency	Total
Allowance for credit losses at beginning of period	$ (5,274)	$ (648)	$ (5,922)	$ (6,785)	$ (173)	$ (6,958)
Additions on securities for which credit losses were not previously recorded	(9)	(40)	(49)	(9)	(358)	(367)
(Increase) decrease on securities with previously recorded credit losses	(389)	415	26	438	48	486
Write-offs	585	—	585	1,269	210	1,479
Allowance for credit losses at end of period	$ (5,087)	$ (273)	$ (5,360)	$ (5,087)	$ (273)	$ (5,360)

	Three Months Ended June 30, 2022			Six Months Ended June 30, 2022		
(in thousands)	Agency	Non-Agency	Total	Agency	Non-Agency	Total
Allowance for credit losses at beginning of period	$ (11,567)	$ (6)	$ (11,573)	$ (12,851)	$ (1,387)	$ (14,238)
Additions on securities for which credit losses were not previously recorded	(33)	(259)	(292)	(35)	(259)	(294)
(Increase) decrease on securities with previously recorded credit losses	(250)	5	(245)	(2,743)	1,386	(1,357)
Write-offs	2,447	—	2,447	6,226	—	6,226
Allowance for credit losses at end of period	$ (9,403)	$ (260)	$ (9,663)	$ (9,403)	$ (260)	$ (9,663)

The following tables present the components comprising the carrying value of AFS securities for which an allowance for credit losses has not been recorded by length of time that the securities had an unrealized loss position as of June 30, 2023 and December 31, 2022. At June 30, 2023 and December 31, 2022, the Company held 652 and 704 AFS securities, respectively; of the securities for which an allowance for credit losses has not been recorded, 534 and 553 were in an unrealized loss position for less than twelve consecutive months. At both June 30, 2023 and December 31, 2022, none of the Company's AFS securities were in an unrealized loss position for more than twelve months without an allowance for credit losses recorded.

	June 30, 2023					
	Unrealized Loss Position for					
	Less than 12 Months		12 Months or More		Total	
(in thousands)	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses
Agency	$ 7,800,125	$ (312,238)	$ —	$ —	$ 7,800,125	$ (312,238)
Non-Agency	955	(550)	—	—	955	(550)
Total	$ 7,801,080	$ (312,788)	$ —	$ —	$ 7,801,080	$ (312,788)

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	December 31, 2022					
	Unrealized Loss Position for					
	Less than 12 Months		12 Months or More		Total	
(in thousands)	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses
Agency	$ 7,168,694	$ (328,258)	$ —	$ —	$ 7,168,694	$ (328,258)
Non-Agency	117,816	(5,933)	—	—	117,816	(5,933)
Total	$ 7,286,510	$ (334,191)	$ —	$ —	$ 7,286,510	$ (334,191)

Gross Realized Gains and Losses

Gains and losses from the sale of AFS securities are recorded as realized gains (losses) within gain (loss) on investment securities in the Company's condensed consolidated statements of comprehensive income (loss). The following table presents details around sales of AFS securities during the three and six months ended June 30, 2023 and 2022:

	Three Months Ended June 30,		Six Months Ended June 30,	
(in thousands)	2023	2022	2023	2022
Proceeds from sales of available-for-sale securities	$ 215,054	$ 2,326,528	$ 1,575,796	$ 4,339,148
Amortized cost of available-for-sale securities sold	(218,383)	(2,514,613)	(1,611,867)	(4,582,084)
Total realized (losses) gains on sales, net	$ (3,329)	$ (188,085)	$ (36,071)	$ (242,936)
Gross realized gains	$ —	$ 6,884	$ 14,070	$ 21,579
Gross realized losses	(3,329)	(194,969)	(50,141)	(264,515)
Total realized (losses) gains on sales, net	$ (3,329)	$ (188,085)	$ (36,071)	$ (242,936)

Note 5. Servicing Activities

Mortgage Servicing Rights, at Fair Value

A wholly owned subsidiary of the Company has approvals from Fannie Mae and Freddie Mac to own and manage MSR, which represent the right to control the servicing of residential mortgage loans. The Company and its subsidiaries do not originate or directly service mortgage loans, and instead contract with appropriately licensed subservicers to handle substantially all servicing functions in the name of the subservicer for the loans underlying the Company's MSR.

The following table summarizes activity related to MSR for the three and six months ended June 30, 2023 and 2022.

(in thousands)	Three Months Ended June 30, 2023	Three Months Ended June 30, 2022	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022
Balance at beginning of period	$ 3,072,445	$ 3,089,963	$ 2,984,937	$ 2,191,578
Purchases of mortgage servicing rights	180,632	59,945	298,973	544,750
Sales of mortgage servicing rights	—	—	(2,693)	—
Changes in fair value due to:				
Changes in valuation inputs or assumptions used in the valuation model (1)	82,196	199,272	102,617	724,185
Other changes in fair value (2)	(60,517)	(113,715)	(108,178)	(228,004)
Other changes (3)	(800)	(9,274)	(1,700)	(6,318)
Balance at end of period (4)	$ 3,273,956	$ 3,226,191	$ 3,273,956	$ 3,226,191

(1) Includes the impact of acquiring MSR at a cost different from fair value.
(2) Primarily represents changes due to the realization of cash flows.
(3) Includes purchase price adjustments, contractual prepayment protection, and changes due to the Company’s purchase of the underlying collateral.
(4) Based on the principal balance of the loans underlying the MSR reported by servicers on a month lag, adjusted for current month purchases.

At June 30, 2023 and December 31, 2022, the Company pledged MSR with a carrying value of $3.2 billion and $3.0 billion, respectively, as collateral for repurchase agreements, revolving credit facilities and term notes payable. See Note 11 - *Repurchase Agreements*, Note 12 - *Revolving Credit Facilities* and Note 13 - *Term Notes Payable*.

As of June 30, 2023 and December 31, 2022, the key economic assumptions and sensitivity of the fair value of MSR to immediate 10% and 20% adverse changes in these assumptions were as follows:

(dollars in thousands, except per loan data)	June 30, 2023	December 31, 2022
Weighted average prepayment speed:	6.5 %	6.9 %
Impact on fair value of 10% adverse change	$ (71,438)	$ (50,192)
Impact on fair value of 20% adverse change	$ (147,393)	$ (100,995)
Weighted average delinquency:	0.7 %	0.9 %
Impact on fair value of 10% adverse change	$ (4,600)	$ (3,880)
Impact on fair value of 20% adverse change	$ (9,216)	$ (7,777)
Weighted average option-adjusted spread:	5.3 %	5.3 %
Impact on fair value of 10% adverse change	$ (59,897)	$ (44,431)
Impact on fair value of 20% adverse change	$ (121,808)	$ (87,354)
Weighted average per loan annual cost to service:	$ 67.73	$ 67.92
Impact on fair value of 10% adverse change	$ (24,391)	$ (20,148)
Impact on fair value of 20% adverse change	$ (47,963)	$ (39,401)

These assumptions and sensitivities are hypothetical and should be considered with caution. Changes in fair value based on 10% and 20% variations in assumptions generally cannot be extrapolated because the relationship of the change in assumptions to the change in fair value may not be linear. Also, the effect of a variation in a particular assumption on the fair value of MSR is calculated without changing any other assumptions. In reality, changes in one factor may result in changes in another (*e.g.*, increased market interest rates may result in lower prepayments and increased credit losses) that could magnify or counteract the sensitivities. Further, these sensitivities show only the change in the asset balances and do not show any expected change in the fair value of the instruments used to manage the interest rates and prepayment risks associated with these assets.

Risk Mitigation Activities

The primary risks associated with the Company's MSR are changes in interest rates, mortgage spreads and prepayments. The Company economically hedges interest rate and mortgage spread risk primarily with its Agency RMBS portfolio. Prepayment risk is carefully monitored and partially mitigated through the Company's ability to retain the MSR, in certain circumstances, through recapture agreements with its subservicers if the underlying loan is refinanced.

Mortgage Servicing Income

The following table presents the components of servicing income recorded on the Company's condensed consolidated statements of comprehensive income (loss) for the three and six months ended June 30, 2023 and 2022:

	Three Months Ended June 30,		Six Months Ended June 30,	
(in thousands)	**2023**	**2022**	**2023**	**2022**
Servicing fee income	$ 144,370	$ 153,620	$ 273,607	$ 288,834
Ancillary and other fee income	1,391	561	1,760	1,031
Float income	29,462	3,345	53,176	4,287
Total	$ 175,223	$ 157,526	$ 328,543	$ 294,152

Mortgage Servicing Advances

As the servicer of record for the MSR assets, the Company may be required to advance principal and interest payments to security holders, and intermittent tax and insurance payments to local authorities and insurance companies on mortgage loans that are in forbearance, delinquency or default. The Company is responsible for funding these advances, potentially for an extended period of time, before receiving reimbursement from Fannie Mae and Freddie Mac. Servicing advances are priority cash flows in the event of a loan principal reduction or foreclosure and ultimate liquidation of the real estate-owned property, thus making their collection reasonably assured. These servicing advances totaled $81.8 million and $119.0 million and were included in other assets on the condensed consolidated balance sheets as of June 30, 2023 and December 31, 2022, respectively. At June 30, 2023 and December 31, 2022, mortgage loans in 60+ day delinquent status (whether or not subject to forbearance) accounted for approximately 0.6% and 0.8%, respectively, of the aggregate principal balance of loans for which the Company had servicing advance funding obligations.

The Company has one revolving credit facility to finance its servicing advance obligations. At June 30, 2023 and December 31, 2022, the Company had pledged servicing advances with a carrying value of $49.3 million and $67.8 million, respectively, as collateral for this revolving credit facility. See Note 12 - *Revolving Credit Facilities*.

Serviced Mortgage Assets

The Company's total serviced mortgage assets consist of residential mortgage loans underlying its MSR assets, off-balance sheet residential mortgage loans owned by other entities for which the Company acts as servicing administrator and other assets. The following table presents the number of loans and unpaid principal balance of the mortgage assets for which the Company manages the servicing as of June 30, 2023 and December 31, 2022:

	June 30, 2023		December 31, 2022	
(dollars in thousands)	**Number of Loans**	**Unpaid Principal Balance**	**Number of Loans**	**Unpaid Principal Balance**
Mortgage servicing rights	864,979	$ 222,622,177	809,025	$ 204,876,693
Residential mortgage loans	614	356,994	636	374,005
Other assets	4	280	4	269
Total serviced mortgage assets	865,597	$ 222,979,451	809,665	$ 205,250,967

Note 6. Cash, Cash Equivalents and Restricted Cash

Cash and cash equivalents include cash held in bank accounts and cash held in money market funds on an overnight basis.

The Company is required to maintain certain cash balances with counterparties for securities and derivatives trading activity, servicing activities and collateral for the Company's borrowings in restricted accounts. The Company has also placed cash in a restricted account pursuant to a letter of credit on an office space lease.

The following table presents the Company's restricted cash balances as of June 30, 2023 and December 31, 2022:

(in thousands)	June 30, 2023	December 31, 2022
Restricted cash balances held by trading counterparties:		
For securities trading activity	$ 450	$ 2,202
For derivatives trading activity	15,597	79,220
For servicing activities	28,353	36,690
As restricted collateral for borrowings	278,142	324,854
Total restricted cash balances held by trading counterparties	322,542	442,966
Restricted cash balance pursuant to letter of credit on office lease	61	60
Total	$ 322,603	$ 443,026

The following table provides a reconciliation of cash, cash equivalents, and restricted cash reported on the Company's condensed consolidated balance sheets as of June 30, 2023 and December 31, 2022 that sum to the total of the same such amounts shown in the statements of cash flows:

(in thousands)	June 30, 2023	December 31, 2022
Cash and cash equivalents	$ 699,081	$ 683,479
Restricted cash	322,603	443,026
Total cash, cash equivalents and restricted cash	$ 1,021,684	$ 1,126,505

Note 7. Derivative Instruments and Hedging Activities

The Company enters into a variety of derivative and non-derivative instruments in connection with its risk management activities. The primary objective for executing these derivative and non-derivative instruments is to mitigate the Company's economic exposure to future events that are outside its control, principally cash flow volatility associated with interest rate risk (including associated prepayment risk). Specifically, the Company enters into derivative and non-derivative instruments to economically hedge interest rate risk or "duration mismatch (or gap)" by adjusting the duration of its floating-rate borrowings into fixed-rate borrowings to more closely match the duration of its assets. This particularly applies to floating-rate borrowing agreements with maturities or interest rate resets of less than six months. Typically, the interest receivable terms (*e.g.*, Overnight Index Swap Rate, or OIS, or SOFR) of certain derivatives match the terms of the underlying debt, resulting in an effective conversion of the rate of the related borrowing agreement from floating to fixed. The objective is to manage the cash flows associated with current and anticipated interest payments on borrowings, as well as the ability to roll or refinance borrowings at the desired amount by adjusting the duration.

To help manage the adverse impact of interest rate changes on the value of the Company's portfolio as well as its cash flows, the Company may, at times, enter into various forward contracts, including short securities, Agency to-be-announced securities, or TBAs, options, futures, swaps, caps and total return swaps. In executing on the Company's current risk management strategy, the Company has entered into TBAs, interest rate swap and swaption agreements, futures and options on futures. The Company has also entered into a number of non-derivative instruments to manage interest rate risk, principally MSR and interest-only securities (see discussion below).

The following summarizes the Company's significant asset and liability classes, the risk exposure for these classes, and the Company's risk management activities used to mitigate these risks. The discussion includes both derivative and non-derivative instruments used as part of these risk management activities. Any of the Company's derivative and non-derivative instruments may be entered into in conjunction with one another in order to mitigate risks. As a result, the following discussions of each type of instrument should be read as a collective representation of the Company's risk mitigation efforts and should not be considered independent of one another. While the Company uses derivative and non-derivative instruments to achieve the Company's risk management activities, it is possible that these instruments will not effectively mitigate all or a substantial portion of the Company's market rate risk. In addition, the Company might elect, at times, not to enter into certain hedging arrangements in order to maintain compliance with REIT requirements.

Balance Sheet Presentation

In accordance with ASC 815, the Company records derivative financial instruments on its condensed consolidated balance sheets as assets or liabilities at fair value. Changes in fair value are accounted for depending on the use of the derivative instruments and whether they are designated or qualifying as hedge instruments. Due to the volatility of the interest rate and credit markets and difficulty in effectively matching pricing or cash flows, the Company has not designated any current derivatives as hedging instruments.

The following tables present the gross fair value and notional amounts of the Company's derivative financial instruments treated as trading derivatives as of June 30, 2023 and December 31, 2022:

	June 30, 2023			
	Derivative Assets		Derivative Liabilities	
(in thousands)	Fair Value	Notional	Fair Value	Notional
Inverse interest-only securities	$ 12,509	$ 179,542	$ —	$ —
Interest rate swap agreements	—	—	—	8,977,714
Swaptions, net	276	(200,000)	—	—
TBAs	3,684	(422,000)	(14,976)	3,473,000
Futures, net	—	(6,624,550)	—	—
Total	$ 16,469	$ (7,067,008)	$ (14,976)	$ 12,450,714

	December 31, 2022			
	Derivative Assets		Derivative Liabilities	
(in thousands)	Fair Value	Notional	Fair Value	Notional
Inverse interest-only securities	$ 15,293	$ 196,456	$ —	$ —
Interest rate swap agreements	—	—	—	—
Swaptions, net	—	—	—	—
TBAs	11,145	(650,000)	(34,048)	4,476,000
Futures, net	—	(18,285,452)	—	—
Total	$ 26,438	$ (18,738,996)	$ (34,048)	$ 4,476,000

Comprehensive Income (Loss) Statement Presentation

The Company has not applied hedge accounting to its current derivative portfolio held to mitigate interest rate risk and credit risk. As a result, the Company is subject to volatility in its earnings due to movement in the unrealized gains and losses associated with its derivative instruments.

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The following table summarizes the location and amount of gains and losses on derivative instruments reported in the condensed consolidated statements of comprehensive income (loss):

Derivative Instruments	Location of Gain (Loss) Recognized in Income	Amount of Gain (Loss) Recognized in Income			
		Three Months Ended June 30,		Six Months Ended June 30,	
(in thousands)		2023	2022	2023	2022
Interest rate risk management:					
TBAs	Gain (loss) on other derivative instruments	$ (77,083)	$ (109,442)	$ (94,247)	$ (308,278)
Futures	Gain (loss) on other derivative instruments	126,923	11,312	(13,164)	117,407
Options on futures	Gain (loss) on other derivative instruments	—	(158)	—	(2,224)
Interest rate swaps - Payers	Gain (loss) on interest rate swap and swaption agreements	123,602	235,234	51,842	672,394
Interest rate swaps - Receivers	Gain (loss) on interest rate swap and swaption agreements	(67,291)	(204,550)	(77,659)	(681,689)
Swaptions	Gain (loss) on interest rate swap and swaption agreements	222	2,050	196	3,988
Non-risk management:					
Inverse interest-only securities	Gain (loss) on other derivative instruments	(2,679)	(2,985)	(1,199)	(9,940)
Total		$ 103,694	$ (68,539)	$ (134,231)	$ (208,342)

For the three and six months ended June 30, 2023, the Company recognized income of $3.5 million and $7.1 million, respectively, for the accrual and/or settlement of the net interest expense associated with its interest rate swaps and caps. The income/expense results from receiving either a floating interest rate (OIS or SOFR) or a fixed interest rate and paying either a fixed interest rate or a floating interest rate (OIS or SOFR) on an average $8.5 billion and $5.9 billion notional, respectively. For the three and six months ended June 30, 2022, the Company recognized expense of $4.3 million and $5.0 million respectively, for the accrual and/or settlement of the net interest expense associated with its interest rate swaps. The expense results from receiving either a floating interest rate (OIS or SOFR) or a fixed interest rate and paying either a fixed interest rate or a floating interest rate (OIS or SOFR) on an average $20.5 billion and $22.5 billion notional, respectively.

The following tables present information with respect to the volume of activity in the Company's derivative instruments during the three and six months ended June 30, 2023 and 2022:

	Three Months Ended June 30, 2023					
(in thousands)	Beginning of Period Notional Amount	Additions	Settlement, Termination, Expiration or Exercise	End of Period Notional Amount	Average Notional Amount	Realized Gain (Loss), net [(1)]
Inverse interest-only securities	$ 188,085	$ —	$ (8,543)	$ 179,542	$ 184,122	$ —
Interest rate swap agreements	8,404,872	572,842	—	8,977,714	8,493,858	—
Swaptions, net	(200,000)	—	—	(200,000)	(200,000)	—
TBAs, net	3,718,000	11,120,000	(11,787,000)	3,051,000	3,411,198	(17,375)
Futures, net	(6,945,550)	(8,967,800)	9,288,800	(6,624,550)	(6,465,800)	(20,101)
Total	$ 5,165,407	$ 2,725,042	$ (2,506,743)	$ 5,383,706	$ 5,423,378	$ (37,476)

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	Three Months Ended June 30, 2022					
(in thousands)	Beginning of Period Notional Amount	Additions	Settlement, Termination, Expiration or Exercise	End of Period Notional Amount	Average Notional Amount	Realized Gain (Loss), net (1)
Inverse interest-only securities	$ 232,218	$ —	$ (14,367)	$ 217,851	$ 225,537	$ (1,875)
Interest rate swap agreements	24,299,647	6,653,204	(16,102,515)	14,850,336	20,461,467	219,025
Swaptions, net	(2,761,000)	—	1,081,000	(1,680,000)	(1,901,286)	27,186
TBAs, net	4,622,000	21,697,000	(20,002,000)	6,317,000	5,568,560	(103,893)
Futures, net	(7,516,650)	(17,500,060)	8,289,550	(16,727,160)	(15,287,970)	2,493
Options on futures, net	2,000	—	(2,000)	—	1,055	(2,224)
Total	$ 18,878,215	$ 10,850,144	$ (26,750,332)	$ 2,978,027	$ 9,067,363	$ 140,712

	Six Months Ended June 30, 2023					
(in thousands)	Beginning of Period Notional Amount	Additions	Settlement, Termination, Expiration or Exercise	End of Period Notional Amount	Average Notional Amount	Realized Gain (Loss), net (1)
Inverse interest-only securities	$ 196,456	$ —	$ (16,914)	$ 179,542	$ 188,401	$ —
Interest rate swap agreements	—	10,565,783	(1,588,069)	8,977,714	5,860,046	(18,580)
Swaptions, net	—	(200,000)	—	(200,000)	(129,282)	—
TBAs, net	3,826,000	25,786,000	(26,561,000)	3,051,000	3,740,503	(105,858)
Futures, net	(18,285,452)	(22,001,850)	33,662,752	(6,624,550)	(10,975,000)	(19,970)
Total	$ (14,262,996)	$ 14,149,933	$ 5,496,769	$ 5,383,706	$ (1,315,332)	$ (144,408)

	Six Months Ended June 30, 2022					
(in thousands)	Beginning of Period Notional Amount	Additions	Settlement, Termination, Expiration or Exercise	End of Period Notional Amount	Average Notional Amount	Realized Gain (Loss), net (1)
Inverse interest-only securities	$ 247,101	$ —	$ (29,250)	$ 217,851	$ 232,750	$ (3,640)
Interest rate swap agreements	20,387,300	17,445,009	(22,981,973)	14,850,336	22,478,619	162,761
Swaptions, net	(1,761,000)	(1,000,000)	1,081,000	(1,680,000)	(2,071,862)	27,186
TBAs, net	4,116,000	42,215,000	(40,014,000)	6,317,000	4,595,387	(294,658)
Futures, net	(5,829,600)	(22,366,160)	11,468,600	(16,727,160)	(11,826,254)	380
Options on futures, net	—	2,000	(2,000)	—	840	(2,224)
Total	$ 17,159,801	$ 36,295,849	$ (50,477,623)	$ 2,978,027	$ 13,409,480	$ (110,195)

(1) Excludes net interest paid or received in full settlement of the net interest spread liability.

Cash flow activity related to derivative instruments is reflected within the operating activities and investing activities sections of the condensed consolidated statements of cash flows. Realized gains and losses and derivative fair value adjustments are reflected within the realized and unrealized loss on interest rate swaps and swaptions and unrealized gains on other derivative instruments line items within the operating activities section of the condensed consolidated statements of cash flows. The remaining cash flow activity related to derivative instruments is reflected within the (purchases) short sales of derivative instruments, net; (payments for termination and settlement) proceeds from sales and settlement of derivative instruments, net; and (decrease) increase in due to counterparties, net line items within the investing activities section of the condensed consolidated statements of cash flows.

Interest Rate Sensitive Assets/Liabilities

The Company's Agency RMBS portfolio is generally subject to change in value when interest rates or prepayment speeds decrease or increase, depending on the type of investment. Periods of rising interest rates with corresponding decreasing prepayment speeds generally result in a decline in the value of the Company's fixed-rate Agency principal and interest (P&I) RMBS. The impact of this effect on the Company's fixed-rate Agency P&I RMBS portfolio is partially mitigated by the presence of fixed-rate interest-only Agency RMBS, which generally increase in value when prepayment speeds decrease and MSR, which generally increase in value when prepayment speeds decrease and interest rates increase. As of June 30, 2023 and December 31, 2022, the Company had $22.2 million and $23.8 million, respectively, of interest-only securities, and $3.3 billion and $3.0 billion, respectively, of MSR. Interest-only securities are included in AFS securities, at fair value, in the condensed consolidated balance sheets.

The Company monitors its borrowings under repurchase agreements and revolving credit facilities, which are generally floating-rate debt, in relation to the rate profile of its portfolio. In connection with its risk management activities, the Company enters into a variety of derivative and non-derivative instruments to economically hedge interest rate risk or duration mismatch (or gap) by adjusting the duration of its floating-rate borrowings into fixed-rate borrowings to more closely match the duration of its assets. This particularly applies to borrowing agreements with maturities or interest rate resets of less than six months. Typically, the interest receivable terms (*e.g.*, OIS or SOFR) of certain derivatives match the terms of the underlying debt, resulting in an effective conversion of the rate of the related borrowing agreement from floating to fixed. The objective is to manage the cash flows associated with current and anticipated interest payments on borrowings, as well as the ability to roll or refinance borrowings at the desired amount by adjusting the duration. To help manage the adverse impact of interest rate changes on the value of the Company's portfolio as well as its cash flows, the Company may, at times, enter into various forward contracts, including short securities, TBAs, options, futures, swaps, caps, credit default swaps and total return swaps. In executing on the Company's current interest rate risk management strategy, the Company has entered into TBAs, interest rate swap and swaption agreements, futures and options on futures.

The Company's derivative contracts that are or were indexed to USD-LIBOR have been amended to transition to an alternative benchmark, where necessary. Any other unmodified agreements that incorporate LIBOR as the referenced rate either (i) already had provisions in place that provide for an alternative to LIBOR upon its phase-out, (ii) matured or (iii) were terminated prior to June 30, 2023. See Note 2 - *Basis of Presentation and Significant Accounting Policies* for further discussion of the transition away from LIBOR.

TBAs. The Company may use TBAs as a means of deploying capital until targeted investments are available or to take advantage of temporary displacements, funding advantages or valuation differentials in the marketplace. Additionally, the Company may use TBAs independently, or in conjunction with other derivative and non-derivative instruments, in order to mitigate risks. TBAs are forward contracts for the purchase (long notional positions) or sale (short notional positions) of Agency RMBS. The issuer, coupon and stated maturity of the Agency RMBS are predetermined as well as the trade price, face amount and future settle date (published each month by the Securities Industry and Financial Markets Association). However, the specific Agency RMBS to be delivered upon settlement is not known at the time of the TBA transaction. As a result, and because physical delivery of the Agency RMBS upon settlement cannot be assured, the Company accounts for TBAs as derivative instruments.

The Company may hold both long and short notional TBA positions, which are disclosed on a gross basis according to the unrealized gain or loss position of each TBA contract regardless of long or short notional position. The following tables present the notional amount, cost basis, market value and carrying value (which approximates fair value) of the Company's TBA positions as of June 30, 2023 and December 31, 2022:

	June 30, 2023				
				Net Carrying Value [4]	
(in thousands)	Notional Amount [1]	Cost Basis [2]	Market Value [3]	Derivative Assets	Derivative Liabilities
Purchase contracts	$ 4,010,000	$ 3,859,767	$ 3,845,290	$ 499	$ (14,976)
Sale contracts	(959,000)	(953,915)	(950,730)	3,185	—
TBAs, net	$ 3,051,000	$ 2,905,852	$ 2,894,560	$ 3,684	$ (14,976)

TWO HARBORS INVESTMENT CORP.

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	December 31, 2022				
				Net Carrying Value [4]	
(in thousands)	Notional Amount [1]	Cost Basis [2]	Market Value [3]	Derivative Assets	Derivative Liabilities
Purchase contracts	$ 4,826,000	$ 4,802,009	$ 4,767,989	$ 28	$ (34,048)
Sale contracts	(1,000,000)	(878,711)	(867,594)	11,117	—
TBAs, net	$ 3,826,000	$ 3,923,298	$ 3,900,395	$ 11,145	$ (34,048)

(1) Notional amount represents the face amount of the underlying Agency RMBS.
(2) Cost basis represents the forward price to be paid (received) for the underlying Agency RMBS.
(3) Market value represents the current market value of the TBA (or of the underlying Agency RMBS) as of period end.
(4) Net carrying value represents the difference between the market value of the TBA as of period end and its cost basis, and is reported in derivative assets / (liabilities), at fair value, in the condensed consolidated balance sheets.

Futures. The Company may use a variety of types of futures independently, or in conjunction with other derivative and non-derivative instruments, in order to mitigate risks. The following table summarizes certain characteristics of the Company's futures as of June 30, 2023 and December 31, 2022:

(dollars in thousands)	June 30, 2023			December 31, 2022		
Type & Maturity	Notional Amount	Carrying Value	Weighted Average Days to Expiration	Notional Amount	Carrying Value	Weighted Average Days to Expiration
U.S. Treasury futures - 2 year	$ —	$ —	0	$ (562,200)	$ —	95
U.S. Treasury futures - 5 year	(2,385,900)	—	96	(3,855,500)	—	95
U.S. Treasury futures - 10 year	(1,675,900)	—	91	(2,397,200)	—	90
U.S. Treasury futures - 20 year	30,000	—	91	101,000	—	90
Federal Funds futures	—	—	0	(7,948,552)	—	92
SOFR/Eurodollar futures [1]						
≤ 1 year	(1,322,250)	—	286	(2,957,000)	—	184
> 1 and ≤ 2 years	(1,083,000)	—	540	(666,000)	—	489
> 2 and ≤ 3 years	(187,500)	—	809	—	—	0
Total futures	$ (6,624,550)	$ —	255	$ (18,285,452)	$ —	122

(1) During the three months ended June 30, 2023, all of the Company's outstanding Eurodollar futures contracts with maturities after June 30, 2023 were converted into three-month SOFR futures contracts with similar characteristics.

Interest Rate Swap Agreements. The Company may use interest rate swaps independently, or in conjunction with other derivative and non-derivative instruments, in order to mitigate risks. The Company did not hold any interest rate swaps as of December 31, 2022. As of June 30, 2023, the Company held the following interest rate swaps that were utilized as economic hedges of interest rate exposure (or duration) whereby the Company receives interest at a floating interest rate (OIS or SOFR):

(notional in thousands)

	June 30, 2023			
Swaps Maturities	Notional Amount (1)	Weighted Average Fixed Pay Rate (2)	Weighted Average Receive Rate	Weighted Average Maturity (Years)
2024	$ —	— %	— %	0.00
2025	—	— %	— %	0.00
2026	2,647,671	4.730 %	5.090 %	1.71
2027	—	— %	— %	0.00
2028 and Thereafter	3,129,121	3.508 %	5.090 %	6.49
Total	$ 5,776,792	4.099 %	5.090 %	4.18

(1) Notional amount includes $301.6 million in forward starting interest rate swaps as of June 30, 2023.
(2) Weighted averages exclude forward starting interest rate swaps. As of June 30, 2023, the weighted average fixed receive rate on forward starting interest rate swaps was 3.6%.

Additionally, as of June 30, 2023, the Company held the following interest rate swaps in order to mitigate mortgage interest rate exposure (or duration) risk whereby the Company pays interest at a floating interest rate (OIS or SOFR):

(notional in thousands)

	June 30, 2023			
Swaps Maturities	Notional Amount (1)	Weighted Average Pay Rate (2)	Weighted Average Fixed Receive Rate (2)	Weighted Average Maturity (Years) (2)
2024	$ —	— %	— %	0.00
2025	—	— %	— %	0.00
2026	1,831,339	5.090 %	3.899 %	1.72
2027	—	— %	— %	0.00
2028 and Thereafter	1,369,583	5.090 %	3.328 %	6.28
Total	$ 3,200,922	5.090 %	3.684 %	8.00

(1) Notional amount includes $260.0 million in forward starting interest rate swaps as of June 30, 2023.
(2) Weighted averages exclude forward starting interest rate swaps. As of June 30, 2023, the weighted average fixed receive rate on forward starting interest rate swaps was 5.1%.

Interest Rate Swaptions. The Company may use interest rate swaptions (which provide the option to enter into interest rate swap agreements for a predetermined notional amount, stated term and pay and receive interest rates in the future) independently, or in conjunction with other derivative and non-derivative instruments, in order to mitigate risks. The Company did not hold any interest rate swaptions as of December 31, 2022. As of June 30, 2023, the Company had the following outstanding interest rate swaptions:

(notional and dollars in thousands)	June 30, 2023						
	Option				Underlying Swap		
Swaption	Expiration	Cost Basis	Fair Value	Average Months to Expiration	Notional Amount	Average Fixed Rate [1]	Average Term (Years)
Purchase contracts:							
Payer	< 6 Months	$ 660	$ 515	2.20	$ 200,000	5.19 %	1.0
Sale contracts:							
Payer	< 6 Months	$ (580)	$ (239)	2.20	$ (400,000)	5.72 %	1.0

(1) As of June 30, 2023, 100.0% of the underlying swap floating rates were tied to SOFR.

Credit Risk

The Company's exposure to credit losses on its Agency RMBS portfolio is limited due to implicit or explicit backing from either a GSE or a U.S. government agency. The payment of principal and interest on the Freddie Mac and Fannie Mae mortgage-backed securities are guaranteed by those respective agencies, and the payment of principal and interest on the Ginnie Mae mortgage-backed securities are backed by the full faith and credit of the U.S. government.

In future periods, the Company could enhance its credit risk protection, enter into further paired derivative positions, including both long and short credit default swaps, and/or seek opportunistic trades in the event of a market disruption (see discussion under "*Non-Risk Management Activities*" below). The Company also has processes and controls in place to monitor, analyze, manage and mitigate its credit risk with respect to non-Agency securities.

Derivative financial instruments contain an element of credit risk if counterparties are unable to meet the terms of the agreements. Credit risk associated with derivative financial instruments is measured as the net replacement cost should the counterparties that owe the Company under such contracts completely fail to perform under the terms of these contracts, assuming there are no recoveries of underlying collateral, as measured by the market value of the derivative financial instruments. As of June 30, 2023, the fair value of derivative financial instruments as an asset and liability position was $16.5 million and $15.0 million, respectively.

The Company attempts to mitigate its credit risk exposure on derivative financial instruments by limiting its counterparties to banks and financial institutions that meet established internal credit guidelines. The Company also seeks to spread its credit risk exposure across multiple counterparties in order to reduce its exposure to any single counterparty. Additionally, the Company reduces credit risk on the majority of its derivative instruments by entering into agreements that permit the closeout and netting of transactions with the same counterparty or clearing agency upon the occurrence of certain events. To further mitigate the risk of counterparty default, the Company maintains collateral agreements with certain of its counterparties and clearing agencies, which require both parties to maintain cash deposits in the event the fair values of the derivative financial instruments exceed established thresholds. The Company's centrally cleared interest rate swaps and exchange-traded futures and options on futures require the Company to post an "initial margin" amount determined by the clearing exchange, which is generally intended to be set at a level sufficient to protect the exchange from the derivative instrument's maximum estimated single-day price movement. The Company also exchanges "variation margin" based upon daily changes in fair value, as measured by the exchange. The exchange of variation margin is considered a settlement of the derivative instrument, as opposed to pledged collateral. Accordingly, the Company accounts for the receipt or payment of variation margin as a direct reduction to the carrying value of the centrally cleared or exchange-traded derivative asset or liability.

Note 8. Reverse Repurchase Agreements

As of June 30, 2023 and December 31, 2022, the Company had $186.6 million and $189.5 million in amounts due to counterparties as collateral for reverse repurchase agreements that could be pledged, delivered or otherwise used, with a fair value of $289.3 million and $189.3 million, respectively. Additionally, as of December 31, 2022, the Company had entered into $877.6 million in reverse repurchase agreements in order to effectively borrow U.S. Treasury securities and pledge them as collateral for $888.3 million of repurchase agreements (see Note 11 - *Repurchase Agreements* for further detail). As of June 30, 2023, the Company had no reverse repurchase agreements in place to effectively borrow U.S. Treasury securities. These reverse repurchase agreements had the same maturities as the corresponding repurchase agreements, which were all short term as of both June 30, 2023 and December 31, 2022.

Note 9. Offsetting Assets and Liabilities

Certain of the Company's repurchase agreements are governed by underlying agreements that provide for a right of setoff in the event of default by either party to the agreement. The Company also has netting arrangements in place with all derivative counterparties pursuant to standard documentation developed by the International Swap and Derivatives Association, or ISDA, or central clearing exchange agreements. The Company and the counterparty or clearing agency are required to post cash collateral based upon the net underlying market value of the Company's open positions with the counterparty. Additionally, the Company's centrally cleared interest rate swaps and exchange-traded futures and options on futures require the Company to post an initial margin amount determined by the clearing exchange, which is generally intended to be set at a level sufficient to protect the exchange from the derivative instrument's maximum estimated single-day price movement. The Company also exchanges variation margin based upon daily changes in fair value, as measured by the exchange.

Under U.S. GAAP, if the Company has a valid right of setoff, it may offset the related asset and liability and report the net amount. Based on rules governing certain central clearing and exchange-trading activities, the exchange of variation margin is considered a settlement of the derivative instrument, as opposed to pledged collateral. Accordingly, the Company accounts for the receipt or payment of variation margin on Chicago Mercantile Exchange, or CME, and London Clearing House, or LCH, cleared positions as a direct reduction to the carrying value of the centrally cleared or exchange-traded derivative asset or liability. The receipt or payment of initial margin is accounted for separate from the derivative asset or liability.

Reverse repurchase agreements and repurchase agreements with the same counterparty and the same maturity are presented net in the Company's condensed consolidated balance sheets when the terms of the agreements meet the criteria to permit netting. The Company reports cash flows on repurchase agreements as financing activities and cash flows on reverse repurchase agreements as investing activities in the condensed consolidated statements of cash flows. The Company presents derivative assets and liabilities (other than centrally cleared or exchange-traded derivative instruments) subject to master netting arrangements or similar agreements on a net basis, based on derivative type and counterparty, in its condensed consolidated balance sheets. Separately, the Company presents cash collateral subject to such arrangements (other than variation margin on centrally cleared or exchange-traded derivative instruments) on a net basis, based on counterparty, in its condensed consolidated balance sheets. However, the Company does not offset repurchase agreements, reverse repurchase agreements or derivative assets and liabilities (other than centrally cleared or exchange-traded derivative instruments) with the associated cash collateral on its condensed consolidated balance sheets.

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Notes to the Condensed Consolidated Financial Statements (unaudited)

The following tables present information about the Company's assets and liabilities that are subject to master netting arrangements or similar agreements and can potentially be offset on the Company's condensed consolidated balance sheets as of June 30, 2023 and December 31, 2022:

	June 30, 2023					
				Gross Amounts Not Offset with Financial Assets (Liabilities) in the Balance Sheets (1)		
(in thousands)	Gross Amounts of Recognized Assets (Liabilities)	Gross Amounts Offset in the Balance Sheets	Net Amounts of Assets (Liabilities) Presented in the Balance Sheets	Financial Instruments	Cash Collateral (Received) Pledged	Net Amount
Assets:						
Derivative assets	$ 157,155	$ (140,686)	$ 16,469	$ (14,976)	$ —	$ 1,493
Reverse repurchase agreements	289,288	—	289,288	—	(186,634)	102,654
Total Assets	$ 446,443	$ (140,686)	$ 305,757	$ (14,976)	$ (186,634)	$ 104,147
Liabilities:						
Repurchase agreements	$ (9,067,824)	$ —	$ (9,067,824)	$ 9,067,824	$ —	$ —
Derivative liabilities	(155,662)	140,686	(14,976)	14,976	—	—
Total Liabilities	$ (9,223,486)	$ 140,686	$ (9,082,800)	$ 9,082,800	$ —	$ —

	December 31, 2022					
				Gross Amounts Not Offset with Financial Assets (Liabilities) in the Balance Sheets (1)		
(in thousands)	Gross Amounts of Recognized Assets (Liabilities)	Gross Amounts Offset in the Balance Sheets	Net Amounts of Assets (Liabilities) Presented in the Balance Sheets	Financial Instruments	Cash Collateral (Received) Pledged	Net Amount
Assets:						
Derivative assets	$ 98,609	$ (72,171)	$ 26,438	$ (26,438)	$ —	$ —
Reverse repurchase agreements	1,066,935	—	1,066,935	(888,295)	(178,640)	—
Total Assets	$ 1,165,544	$ (72,171)	$ 1,093,373	$ (914,733)	$ (178,640)	$ —
Liabilities:						
Repurchase agreements	$ (8,603,011)	$ —	$ (8,603,011)	$ 8,603,011	$ —	$ —
Derivative liabilities	(106,219)	72,171	(34,048)	26,438	—	(7,610)
Total Liabilities	$ (8,709,230)	$ 72,171	$ (8,637,059)	$ 8,629,449	$ —	$ (7,610)

(1) Amounts presented are limited in total to the net amount of assets or liabilities presented in the condensed consolidated balance sheets by instrument. Excess cash collateral or financial assets that are pledged to counterparties may exceed the financial liabilities subject to a master netting arrangement or similar agreement, or counterparties may have pledged excess cash collateral to the Company that exceed the corresponding financial assets. These excess amounts are excluded from the table above, although separately reported within restricted cash, due from counterparties, or due to counterparties in the Company's condensed consolidated balance sheets.

Note 10. Fair Value

Fair Value Measurements

ASC 820 defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. ASC 820 clarifies that fair value should be based on the assumptions market participants would use when pricing an asset or liability and establishes a fair value hierarchy that prioritizes the information used to develop those assumptions. The fair value hierarchy gives the highest priority to quoted prices available in active markets (*i.e.*, observable inputs) and the lowest priority to data lacking transparency (*i.e.*, unobservable inputs). Additionally, ASC 820 requires an entity to consider all aspects of nonperformance risk, including the entity's own credit standing, when measuring fair value of a liability.

ASC 820 establishes a three-level hierarchy to be used when measuring and disclosing fair value. An instrument's categorization within the fair value hierarchy is based on the lowest level of significant input to its valuation. The following is a description of the three levels:

Level 1	Inputs are quoted prices in active markets for identical assets or liabilities as of the measurement date under current market conditions. Additionally, the entity must have the ability to access the active market and the quoted prices cannot be adjusted by the entity.
Level 2	Inputs include quoted prices in active markets for similar assets or liabilities; quoted prices in inactive markets for identical or similar assets or liabilities; or inputs that are observable or can be corroborated by observable market data by correlation or other means for substantially the full-term of the assets or liabilities.
Level 3	Unobservable inputs are supported by little or no market activity. The unobservable inputs represent the assumptions that market participants would use to price the assets and liabilities, including risk. Generally, Level 3 assets and liabilities are valued using pricing models, discounted cash flow methodologies, or similar techniques that require significant judgment or estimation.

The following are descriptions of the valuation methodologies used to measure material assets and liabilities at fair value and details of the valuation models, key inputs to those models and significant assumptions utilized.

Available-for-sale securities. The Company holds a portfolio of AFS securities that are carried at fair value in the condensed consolidated balance sheets and primarily comprised of Agency and non-Agency investment securities. The Company determines the fair value of its Agency securities based upon prices obtained from third-party brokers and pricing vendors received using bid price, which are deemed indicative of market activity. The third-party pricing vendors use pricing models that generally incorporate such factors as coupons, primary and secondary mortgage rates, rate reset period, issuer, prepayment speeds, credit enhancements and expected life of the security. In determining the fair value of its non-Agency securities, management judgment may be used to arrive at fair value that considers prices obtained from third-party pricing vendors and other applicable market data. If observable market prices are not available or insufficient to determine fair value due principally to illiquidity in the marketplace, then fair value is based upon models that are primarily based on observable market-based inputs but also include unobservable market data inputs (including prepayment speeds, delinquency levels, and credit losses).

The Company classified 99.0% and 1.0% of its AFS securities as Level 2 and Level 3 fair value assets, respectively, at June 30, 2023.

Mortgage servicing rights. The Company holds a portfolio of MSR that are carried at fair value on the condensed consolidated balance sheets. The Company determines fair value of its MSR based on prices obtained from third-party pricing vendors. Although MSR transactions may be observable in the marketplace, the details of those transactions are not necessarily reflective of the value of the Company's MSR portfolio. Third-party vendors use both observable market data and unobservable market data (including forecasted prepayment speeds; option-adjusted spread, or OAS; and cost to service) as inputs into models, which help to inform their best estimates of fair value market price. As a result, the Company classified 100% of its MSR as Level 3 fair value assets at June 30, 2023.

Derivative instruments. The Company may enter into a variety of derivative financial instruments as part of its hedging strategies. The Company principally executes over-the-counter, or OTC, derivative contracts, such as interest rate swaps and swaptions. The Company utilizes third-party brokers to value its financial derivative instruments. The Company classified 100% of its interest rate swaps and swaptions reported at fair value as Level 2 at June 30, 2023.

The Company may also enter into certain other derivative financial instruments, such as inverse interest-only securities, TBAs, futures and options on futures. The Company utilizes third-party pricing vendors to value inverse interest-only securities, as these instruments are similar in form to the Company's AFS securities. The Company classified 100% of its inverse interest-only securities at fair value as Level 2 at June 30, 2023. TBAs, futures and options on futures are considered to be active markets such that participants transact with sufficient frequency and volume to provide transparent pricing information for identical instruments. The Company utilizes third-party pricing vendors to value TBAs, futures and options on futures. The Company reported 100% of its TBAs and futures as Level 1 as of June 30, 2023. The Company did not hold any options on futures at June 30, 2023.

The Company's policy is to minimize credit exposure related to financial derivatives used for hedging by limiting the hedge counterparties to major banks, financial institutions, exchanges, and private investors who meet established capital and credit guidelines as well as by limiting the amount of exposure to any individual counterparty.

The Company has netting arrangements in place with all derivative counterparties pursuant to standard documentation developed by ISDA or central clearing exchange agreements. Additionally, both the Company and the counterparty or clearing agency are required to post cash margin based upon the net underlying market value of the Company's open positions with the counterparty. Posting of cash margin typically occurs daily, subject to certain dollar thresholds. Due to the existence of netting arrangements, as well as frequent cash margin posting at low posting thresholds, credit exposure to the Company and/or to the counterparty or clearing agency is considered materially mitigated. Based on the Company's assessment, there is no requirement for any additional adjustment to derivative valuations specifically for credit.

The following tables display the Company's assets and liabilities measured at fair value on a recurring basis. The Company often economically hedges the fair value change of its assets or liabilities with derivatives and other financial instruments. The tables below display the hedges separately from the hedged items, and therefore do not directly display the impact of the Company's risk management activities:

	Recurring Fair Value Measurements June 30, 2023			
(in thousands)	**Level 1**	**Level 2**	**Level 3**	**Total**
Assets:				
Available-for-sale securities	$ —	$ 8,875,395	$ 87,808	$ 8,963,203
Mortgage servicing rights	—	—	3,273,956	3,273,956
Derivative assets	3,684	12,785	—	16,469
Total assets	$ 3,684	$ 8,888,180	$ 3,361,764	$ 12,253,628
Liabilities:				
Derivative liabilities	$ 14,976	$ —	$ —	$ 14,976
Total liabilities	$ 14,976	$ —	$ —	$ 14,976

	Recurring Fair Value Measurements December 31, 2022			
(in thousands)	**Level 1**	**Level 2**	**Level 3**	**Total**
Assets:				
Available-for-sale securities	$ —	$ 7,653,576	$ 125,158	$ 7,778,734
Mortgage servicing rights	—	—	2,984,937	2,984,937
Derivative assets	11,145	15,293	—	26,438
Total assets	$ 11,145	$ 7,668,869	$ 3,110,095	$ 10,790,109
Liabilities:				
Derivative liabilities	$ 34,048	$ —	$ —	$ 34,048
Total liabilities	$ 34,048	$ —	$ —	$ 34,048

The Company may be required to measure certain assets or liabilities at fair value from time to time. These periodic fair value measures typically result from application of certain impairment measures under U.S. GAAP. These items would constitute nonrecurring fair value measures under ASC 820. As of June 30, 2023, the Company did not have any assets or liabilities measured at fair value on a nonrecurring basis in the periods presented.

The valuation of Level 3 instruments requires significant judgment by the third-party pricing vendors and/or management. The third-party pricing vendors and/or management rely on inputs such as market price quotations from market makers (either market or indicative levels), original transaction price, recent transactions in the same or similar instruments, and changes in financial ratios or cash flows to determine fair value. Level 3 instruments may also be discounted to reflect illiquidity and/or non-transferability, with the amount of such discount estimated by the third-party pricing vendors in the absence of market information. Assumptions used by the third-party pricing vendors due to lack of observable inputs may significantly impact the resulting fair value and therefore the Company's condensed consolidated financial statements.

The Company's valuation committee reviews all valuations that are based on pricing information received from third-party pricing vendors. As part of this review, prices are compared against other pricing or input data points in the marketplace, along with internal valuation expertise, to ensure the pricing is reasonable. In addition, the Company performs back-testing of pricing information to validate price information and identify any pricing trends of a third-party pricing vendors.

In determining fair value, third-party pricing vendors use various valuation approaches, including market and income approaches. Inputs that are used in determining fair value of an instrument may include pricing information, credit data, volatility statistics, and other factors. In addition, inputs can be either observable or unobservable.

The availability of observable inputs can vary by instrument and is affected by a wide variety of factors, including the type of instrument, whether the instrument is new and not yet established in the marketplace and other characteristics particular to the instrument. The third-party pricing vendor uses prices and inputs that are current as of the measurement date, including during periods of market dislocations. In periods of market dislocation, the availability of prices and inputs may be reduced for many instruments. This condition could cause an instrument to be reclassified to or from various levels within the fair value hierarchy.

Securities that are priced using third-party broker quotations are valued at the bid price (in the case of long positions) or the ask price (in the case of short positions) at the close of trading on the date as of which value is determined. Exchange-traded securities for which no bid or ask price is available are valued at the last traded price. OTC derivative contracts, including interest rate swap and swaption agreements, are valued by the Company using observable inputs, specifically quotations received from third-party brokers. Exchange-traded derivative instruments, including futures and options on futures, are valued based on quoted prices for identical instruments in active markets.

The following table presents the reconciliation for the Company's Level 3 assets measured at fair value on a recurring basis:

(in thousands)	Three Months Ended June 30, 2023		Six Months Ended June 30, 2023	
	Available-For-Sale Securities	Mortgage Servicing Rights	Available-For-Sale Securities	Mortgage Servicing Rights
Beginning of period level 3 fair value	$ 127,280	$ 3,072,445	$ 125,158	$ 2,984,937
Gains (losses) included in net income (loss):				
Realized	(480)	(60,517)	(1,028)	(109,017)
Unrealized	3,431 (1)	82,196 (2)	5,463 (1)	102,617 (2)
Reversal of provision for credit losses	376	—	(99)	—
Net gains (losses) included in net income (loss)	3,327	21,679	4,336	(6,400)
Other comprehensive (loss) income	(340)	—	773	—
Purchases	—	180,632	—	298,973
Sales	(42,459)	—	(42,459)	(1,854)
Settlements	—	(800)	—	(1,700)
Gross transfers into level 3	—	—	—	—
Gross transfers out of level 3	—	—	—	—
End of period level 3 fair value	$ 87,808	$ 3,273,956	$ 87,808	$ 3,273,956
Change in unrealized gains or losses for the period included in earnings for assets held at the end of the reporting period	$ 3,431 (3)	$ 82,008 (4)	$ 5,464 (3)	$ 101,797 (4)
Change in unrealized gains or losses for the period included in other comprehensive loss for assets held at the end of the reporting period	$ (340)	$ —	$ 772	$ —

(1) The change in unrealized gains or losses on available-for-sale securities accounted for under the fair value option was recorded in gain (loss) on investment securities on the condensed consolidated statements of comprehensive income (loss).
(2) The change in unrealized gains or losses on MSR was recorded in gain (loss) on servicing asset on the condensed consolidated statements of comprehensive income (loss).
(3) The change in unrealized gains or losses on available-for-sale securities accounted for under the fair value option that were held at the end of the reporting period was recorded in gain (loss) on investment securities on the condensed consolidated statements of comprehensive income (loss).
(4) The change in unrealized gains or losses on MSR that were held at the end of the reporting period was recorded in gain (loss) on servicing asset on the condensed consolidated statements of comprehensive income (loss).

No transfers between Level 1, Level 2 or Level 3 were made during the six months ended June 30, 2023. Transfers between Levels are deemed to take place on the first day of the reporting period in which the transfer has taken place.

The Company used multiple third-party pricing vendors in the fair value measurement of its Level 3 AFS securities. The significant unobservable inputs used by the third-party pricing vendors included expected default, severity and discount rate. Significant increases (decreases) in any of the inputs in isolation may result in significantly lower (higher) fair value measurement.

The Company also used multiple third-party pricing vendors in the fair value measurement of its Level 3 MSR. The tables below present information about the significant unobservable market data used by the third-party pricing vendors as inputs into models utilized to inform their best estimates of the fair value measurement of the Company's MSR classified as Level 3 fair value assets at June 30, 2023 and December 31, 2022:

June 30, 2023

Valuation Technique	Unobservable Input	Range			Weighted Average [(1)]
Discounted cash flow	Constant prepayment speed	5.9%	-	7.1%	6.5%
	Option-adjusted spread	5.1%	-	8.3%	5.3%
	Per loan annual cost to service	$67.25	-	$80.56	$67.73

December 31, 2022

Valuation Technique	Unobservable Input	Range			Weighted Average [(1)]
Discounted cash flow	Constant prepayment speed	6.2%	-	7.6%	6.9%
	Option-adjusted spread	5.1%	-	8.5%	5.3%
	Per loan annual cost to service	$67.41	-	$80.96	$67.92

(1) Calculated by averaging the weighted average significant unobservable inputs used by the multiple third-party pricing vendors in the fair value measurement of MSR.

Fair Value of Financial Instruments

In accordance with ASC 820, the Company is required to disclose the fair value of financial instruments, both assets and liabilities recognized and not recognized in the condensed consolidated balance sheets, for which fair value can be estimated.

The following describes the Company's methods for estimating the fair value for financial instruments.

- AFS securities, MSR, and derivative assets and liabilities are recurring fair value measurements; carrying value equals fair value. See discussion of valuation methods and assumptions within the *Fair Value Measurements* section of this Note 10.
- Cash and cash equivalents and restricted cash have a carrying value which approximates fair value because of the short maturities of these instruments. The Company categorizes the fair value measurement of these assets as Level 1.
- Reverse repurchase agreements have a carrying value which approximates fair value due to their short-term nature. The Company categorizes the fair value measurement of these assets as Level 2.
- The carrying value of repurchase agreements and revolving credit facilities that mature in less than one year generally approximates fair value due to the short maturities. As of June 30, 2023, the Company had outstanding borrowings of $1.1 billion under revolving credit facilities that are considered long-term. The Company's long-term revolving credit facilities have floating rates based on an index plus a spread and the credit spread is typically consistent with those demanded in the market. Accordingly, the interest rates on these borrowings are at market and thus carrying value approximates fair value. The Company categorizes the fair value measurement of these liabilities as Level 2.
- Term notes payable are recorded at outstanding principal balance, net of any unamortized deferred debt issuance costs. In determining the fair value of term notes payable, management judgment may be used to arrive at fair value that considers prices obtained from third-party pricing vendors, broker quotes received and other applicable market data. If observable market prices are not available or insufficient to determine fair value due principally to illiquidity in the marketplace, then fair value is based upon internally developed models that are primarily based on observable market-based inputs but also include unobservable market data inputs (including prepayment speeds, delinquency levels, and credit losses). The Company categorizes the fair value measurement of these liabilities as Level 2.
- Convertible senior notes are carried at their unpaid principal balance, net of any unamortized deferred issuance costs. The Company estimates the fair value of its convertible senior notes using the market transaction price nearest to June 30, 2023. The Company categorizes the fair value measurement of these assets as Level 2.

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Notes to the Condensed Consolidated Financial Statements (unaudited)

The following table presents the carrying values and estimated fair values of assets and liabilities that are required to be recorded or disclosed at fair value at June 30, 2023 and December 31, 2022:

(in thousands)	June 30, 2023		December 31, 2022	
	Carrying Value	Fair Value	Carrying Value	Fair Value
Assets:				
Available-for-sale securities	$ 8,963,203	$ 8,963,203	$ 7,778,734	$ 7,778,734
Mortgage servicing rights	$ 3,273,956	$ 3,273,956	$ 2,984,937	$ 2,984,937
Cash and cash equivalents	$ 699,081	$ 699,081	$ 683,479	$ 683,479
Restricted cash	$ 322,603	$ 322,603	$ 443,026	$ 443,026
Derivative assets	$ 16,469	$ 16,469	$ 26,438	$ 26,438
Reverse repurchase agreements	$ 289,288	$ 289,288	$ 1,066,935	$ 1,066,935
Other assets	$ 3,504	$ 3,504	$ 3,493	$ 3,493
Liabilities:				
Repurchase agreements	$ 9,067,824	$ 9,067,824	$ 8,603,011	$ 8,603,011
Revolving credit facilities	$ 1,455,421	$ 1,455,421	$ 1,118,831	$ 1,118,831
Term notes payable	$ 398,653	$ 385,254	$ 398,011	$ 361,905
Convertible senior notes	$ 267,791	$ 240,815	$ 282,496	$ 246,727
Derivative liabilities	$ 14,976	$ 14,976	$ 34,048	$ 34,048

Note 11. Repurchase Agreements

As of June 30, 2023 and December 31, 2022, the Company had outstanding $9.1 billion and $8.6 billion, respectively, of repurchase agreements. Excluding the effect of the Company's interest rate swaps, the repurchase agreements had a weighted average borrowing rate of 5.33% and 3.95% and weighted average remaining maturities of 70 and 59 days as of June 30, 2023 and December 31, 2022, respectively. The Company's repurchase agreements that are or were indexed to USD-LIBOR have been amended to transition to an alternative benchmark, where necessary. Any other unmodified agreements that incorporate LIBOR as the referenced rate either (i) already had provisions in place that provide for an alternative to LIBOR upon its phase-out, (ii) matured or (iii) were terminated prior to June 30, 2023. See Note 2 - *Basis of Presentation and Significant Accounting Policies* for further discussion of the transition away from LIBOR.

At June 30, 2023 and December 31, 2022, the Company's repurchase agreements had the following characteristics and remaining maturities:

(in thousands)	June 30, 2023					
	Collateral Type					
	Agency RMBS	Non-Agency Securities	Agency Derivatives	Mortgage Servicing Rights	U.S. Treasuries [(1)]	Total Amount Outstanding
Within 30 days	$ 3,133,072	$ 23,602	$ 3,329	$ —	$ —	$ 3,160,003
30 to 59 days	1,809,482	23,818	—	—	—	1,833,300
60 to 89 days	1,432,666	183	354	—	—	1,433,203
90 to 119 days	1,330,683	—	8,630	—	—	1,339,313
120 to 364 days	1,042,005	—	—	260,000	—	1,302,005
Total	$ 8,747,908	$ 47,603	$ 12,313	$ 260,000	$ —	$ 9,067,824
Weighted average borrowing rate	5.23 %	6.61 %	5.72 %	8.67 %	— %	5.33 %

	December 31, 2022					
	Collateral Type					
(in thousands)	Agency RMBS	Non-Agency Securities	Agency Derivatives	Mortgage Servicing Rights	U.S. Treasuries (1)	Total Amount Outstanding
Within 30 days	$ 2,570,254	$ 59,648	$ 4,177	$ —	$ 57,116	$ 2,691,195
30 to 59 days	1,774,622	10,984	—	—	375,131	2,160,737
60 to 89 days	2,280,675	177	503	—	255,282	2,536,637
90 to 119 days	696,283	—	8,393	—	200,766	905,442
120 to 364 days	—	—	—	309,000	—	309,000
Total	$ 7,321,834	$ 70,809	$ 13,073	$ 309,000	$ 888,295	$ 8,603,011
Weighted average borrowing rate	3.70 %	5.73 %	4.83 %	7.91 %	4.49 %	3.95 %

(1) U.S. Treasury securities effectively borrowed under reverse repurchase agreements.

The following table summarizes assets at carrying values that are pledged or restricted as collateral for the future payment obligations of the Company’s repurchase agreements:

(in thousands)	June 30, 2023	December 31, 2022
Available-for-sale securities, at fair value	$ 8,900,438	$ 7,426,953
Mortgage servicing rights, at fair value (1)	432,838	667,238
Restricted cash	277,940	324,654
Due from counterparties	248,607	22,055
Derivative assets, at fair value	12,089	14,738
U.S. Treasuries (2)	—	877,632
Total	$ 9,871,912	$ 9,333,270

(1) MSR repurchase agreements are secured by a VFN issued in connection with the Company’s securitization of MSR, which is collateralized by the Company’s MSR.
(2) U.S. Treasury securities effectively borrowed under reverse repurchase agreements..

Although the transactions under repurchase agreements represent committed borrowings until maturity, the respective lender retains the right to mark the underlying collateral to fair value. A reduction in the value of pledged assets would require the Company to provide additional collateral or fund margin calls.

As of both June 30, 2023 and December 31, 2022, the net carrying value of assets sold under agreements to repurchase, including accrued interest plus any cash or assets on deposit to secure the repurchase obligation, less the amount of the repurchase liability, including accrued interest, with any individual counterparty or group of related counterparties did not exceed 10% of total stockholders’ equity. The Company does not anticipate any defaults by its repurchase agreement counterparties. There can be no assurance, however, that any such default or defaults will not occur.

Note 12. Revolving Credit Facilities

To finance MSR assets and related servicing advance obligations, the Company has entered into revolving credit facilities collateralized by the value of the MSR and/or servicing advances pledged. As of June 30, 2023 and December 31, 2022, the Company had outstanding short- and long-term borrowings under revolving credit facilities of $1.5 billion and $1.1 billion with a weighted average borrowing rate of 8.46% and 7.68% and weighted average remaining maturities of 1.6 and 1.1 years, respectively. The Company's revolving credit facilities that are or were indexed to USD-LIBOR have been amended to transition to an alternative benchmark, where necessary. Any other unmodified agreements that incorporate LIBOR as the referenced rate either (i) already had provisions in place that provide for an alternative to LIBOR upon its phase-out, (ii) matured or (iii) were terminated prior to June 30, 2023. See Note 2 - *Basis of Presentation and Significant Accounting Policies* for further discussion of the transition away from LIBOR.

At June 30, 2023 and December 31, 2022, borrowings under revolving credit facilities had the following remaining maturities:

(in thousands)	June 30, 2023	December 31, 2022
Within 30 days	$ —	$ —
30 to 59 days	—	—
60 to 89 days	—	—
90 to 119 days	—	—
120 to 364 days	329,000	200,000
One year and over	1,126,421	918,831
Total	$ 1,455,421	$ 1,118,831

Although the transactions under revolving credit facilities represent committed borrowings from the time of funding until maturity, the respective lender retains the right to mark the underlying collateral to fair value. A reduction in the value of pledged assets below a designated threshold would require the Company to provide additional collateral or pay down the facility. As of June 30, 2023 and December 31, 2022, MSR with a carrying value of $2.3 billion and $1.8 billion, respectively, was pledged as collateral for the Company's future payment obligations under its MSR revolving credit facilities. As of June 30, 2023 and December 31, 2022, servicing advances with a carrying value of $49.3 million and $67.8 million, respectively, were pledged as collateral for the Company's future payment obligations under its servicing advance revolving credit facility. The Company does not anticipate any defaults by its revolving credit facility counterparties, although there can be no assurance that any such default or defaults will not occur.

Note 13. Term Notes Payable

The debt issued in connection with the Company's on-balance sheet securitization is classified as term notes payable and carried at outstanding principal balance, which was $400.0 million as of both June 30, 2023 and December 31, 2022, net of any unamortized deferred debt issuance costs, on the Company's condensed consolidated balance sheets. As of June 30, 2023 and December 31, 2022, the outstanding amount due on term notes payable was $398.7 million and $398.0 million, net of deferred debt issuance costs, with a weighted average interest rate of 8.00% and 7.19% and weighted average remaining maturities of 1.0 years and 1.5 years. The Company's term notes previously incorporated LIBOR as the referenced rate, which was replaced with Term SOFR, plus a spread adjustment, during the three months ended June 30, 2023. See Note 2 - *Basis of Presentation and Significant Accounting Policies* for further discussion of the transition away from LIBOR.

At June 30, 2023 and December 31, 2022, the Company pledged MSR with a carrying value of $500.0 million and $500.0 million and weighted average underlying loan coupon of 3.27% and 3.33%, respectively, as collateral for term notes payable. Additionally, as of June 30, 2023 and December 31, 2022, $0.2 million and $0.2 million of cash was held in restricted accounts as collateral for the future payment obligations of outstanding term notes payable, respectively.

Note 14. Convertible Senior Notes

In February 2021, the Company closed an underwritten public offering of $287.5 million aggregate principal amount of convertible senior notes due 2026, or the 2026 notes. The net proceeds from the offering were approximately $279.9 million after deducting underwriting discounts and estimated offering expenses payable by the Company.

The 2026 notes are unsecured, pay interest semiannually at a rate of 6.25% per annum and are convertible at the option of the holder into shares of the Company's common stock. As of June 30, 2023 and December 31, 2022, the 2026 notes had a conversion rate of 33.8752 and 33.8752 shares of common stock per $1,000 principal amount of the notes, respectively. The 2026 notes will mature in January 2026, unless earlier converted or repurchased in accordance with their terms.

The Company does not have the right to redeem the 2026 notes prior to maturity, but may repurchase the 2026 notes in open market or privately negotiated transactions at the same or differing price without giving prior notice to or obtaining any consent of the holders. The Company may also be required to repurchase the notes from holders under certain circumstances. During both the three and six months ended June 30, 2023, the Company repurchased $15.6 million principal amount of its 2026 notes in open market transactions for an aggregate cost of $13.2 million, resulting in a gain, net of unamortized deferred issuance costs, of $2.2 million within the other income (loss) line item on the condensed consolidated statements of comprehensive income (loss). As of June 30, 2023, $271.9 million principal amount of the 2026 notes remained outstanding. The outstanding amount due on the 2026 notes as of June 30, 2023 and December 31, 2022 was $267.8 million and $282.5 million, respectively, net of unamortized deferred issuance costs.

Note 15. Commitments and Contingencies

The following represent the material commitments and contingencies of the Company as of June 30, 2023:

Legal and regulatory. From time to time, the Company may be subject to liability under laws and government regulations and various claims and legal actions arising in the ordinary course of business. Under ASC 450, *Contingencies*, or ASC 450, liabilities are established for legal claims when payments associated with the claims become probable and the costs can be reasonably estimated. The actual costs of resolving legal claims may be substantially higher or lower than the amounts established or the range of reasonably possible loss disclosed for those claims.

As previously disclosed, on July 15, 2020, the Company provided PRCM Advisers with a notice of termination of the Management Agreement for "cause" in accordance with Section 15(a) of the Management Agreement. The Company terminated the Management Agreement for "cause" on the basis of certain material breaches and certain events of gross negligence on the part of PRCM Advisers in the performance of its duties under the Management Agreement. On July 21, 2020, PRCM Advisers filed a complaint against the Company in the United States District Court for the Southern District of New York, or the Court. Subsequently, Pine River Domestic Management L.P. and Pine River Capital Management L.P. were added as plaintiffs to the matter. As amended, the complaint, or the Federal Complaint, alleges, among other things, the misappropriation of trade secrets in violation of both the Defend Trade Secrets Act and New York common law, breach of contract, breach of the implied covenant of good faith and fair dealing, unfair competition and business practices, unjust enrichment, conversion, and tortious interference with contract. The Federal Complaint seeks, among other things, an order enjoining the Company from making any use of or disclosing PRCM Advisers' trade secret, proprietary, or confidential information; damages in an amount to be determined at a hearing and/or trial; disgorgement of the Company's wrongfully obtained profits; and fees and costs incurred by the plaintiffs in pursuing the action. The Company has filed its answer to the Federal Complaint and made counterclaims against PRCM Advisers and Pine River Capital Management L.P. On May 5, 2022, the plaintiffs filed a motion for judgment on the pleadings, seeking judgment in their favor on all but one of the Company's counterclaims and on one of the Company's affirmative defenses. The Company has opposed the motion for judgment on the pleadings, which is pending with the Court. Discovery has commenced and is ongoing. The Company's board of directors believes the Federal Complaint is without merit and that the Company has fully complied with the terms of the Management Agreement.

As of June 30, 2023, the Company's condensed consolidated financial statements do not recognize a contingency liability or disclose a range of reasonably possible loss under ASC 450 because management does not believe that a loss or expense related to the Federal Complaint is probable or reasonably estimable. The specific factors that limit the Company's ability to reasonably estimate a loss or expense related to the Federal Complaint is that discovery is ongoing and the outcome of litigation is uncertain. If and when management believes losses associated with the Federal Complaint are a probable future event that may result in a loss or expense to the Company and the loss or expense is reasonably estimable, the Company will recognize a contingency liability and resulting loss in such period.

Based on information currently available, management is not aware of any other legal or regulatory claims that would have a material effect on the Company's condensed consolidated financial statements and therefore no accrual is required as of June 30, 2023.

Note 16. Stockholders' Equity

Redeemable Preferred Stock

The following is a summary of the Company's series of cumulative redeemable preferred stock issued and outstanding as of June 30, 2023. In the event of a voluntary or involuntary liquidation, dissolution or winding up of the Company, each series of preferred stock will rank on parity with one another and rank senior to the Company's common stock with respect to the payment of the dividends and the distribution of assets.

(dollars in thousands)

Class of Stock	Issuance Date	Shares Issued and Outstanding	Carrying Value	Contractual Rate	Redemption Eligible Date [1]	Fixed to Floating Rate Conversion Date [2]	Floating Annual Rate [3]
Series A	March 14, 2017	5,095,565	$ 123,066	8.125 %	April 27, 2027	April 27, 2027	3M Rate + 5.660%
Series B	July 19, 2017	10,498,082	253,866	7.625 %	July 27, 2027	July 27, 2027	3M Rate + 5.352%
Series C	November 27, 2017	9,984,585	241,647	7.250 %	January 27, 2025	January 27, 2025	3M Rate + 5.011%
Total		25,578,232	$ 618,579				

(1) Subject to the Company's right under limited circumstances to redeem the preferred stock earlier than the redemption eligible date disclosed in order to preserve its qualification as a REIT or following a change in control of the Company.

(2) The dividend rate on the fixed-to-floating rate redeemable preferred stock will remain at an annual fixed rate of the $25.00 per share liquidation preference from the issuance date up to but not including the transition date disclosed within. Effective as of the fixed-to-floating rate conversion date and onward, dividends will accumulate on a floating rate basis according to the terms disclosed in footnote (3) below.

(3) On and after the fixed-to-floating rate conversion date, the dividend will accumulate and be payable quarterly at a percentage of the $25.00 per share liquidation preference equal to a floating base rate, to be determined pursuant to the articles supplementary designating the terms of each respective series of preferred stock, plus the spread indicated within each preferred class. For Series A and Series B, the Company will determine the base rate based on quotations for deposits in U.S. dollars for the dividend period to be provided by nationally-recognized banks in the London interbank market. If the Company is unable to obtain such quotations with respect to any dividend payment, then the base rate in effect for such future dividend payment will be the base rate in effect for the immediately preceding dividend period. For Series C, the Company will appoint a third-party calculation agent that will determine, in its sole discretion, the base rate that is most comparable to three-month LIBOR.

For each series of preferred stock, the Company may redeem the stock on or after the redemption date in whole or in part, at any time or from time to time. The Company may also purchase shares of preferred stock from time to time in the open market by tender or in privately negotiated transactions. Each series of preferred stock has a par value of $0.01 per share and a liquidation and redemption price of $25.00, plus any accumulated and unpaid dividends thereon up to, but excluding, the redemption date. Through June 30, 2023, the Company had declared and paid all required quarterly dividends on the Company's preferred stock.

Preferred Share Repurchase Program

On June 22, 2022, the Company's board of directors authorized the repurchase of up to an aggregate of 5,000,000 shares of the Company's preferred stock, which includes each series shown in the table above under the heading Redeemable Preferred Stock. Preferred shares may be repurchased from time to time through privately negotiated transactions or open market transactions, pursuant to trading plans in accordance with Rule 10b5-1 under the Securities Exchange Act of 1934, as amended, or the Exchange Act, or by any combination of such methods. The manner, price, number and timing of preferred share repurchases are subject to a variety of factors, including market conditions and applicable SEC rules. The preferred share repurchase program does not require the purchase of any minimum number of shares, and, subject to SEC rules, purchases may be commenced or suspended at any time without prior notice. The preferred share repurchase program does not have an expiration date. As of June 30, 2023, a total of 654,435 shares of the Company's 8.125% Series A Cumulative Redeemable Preferred Stock, 1,001,918 shares of the Company's 7.625% Series B Cumulative Redeemable Preferred Stock and 1,815,415 shares of the Company's 7.25% Series C Cumulative Redeemable Preferred Stock had been repurchased by the Company under the program for an aggregate cost of $12.3 million, $17.9 million and $31.2 million, respectively, of which 225,886, 215,072 and 72,860 shares were repurchased for a total cost of $4.5 million, $4.1 million and $1.4 million, respectively, during both the three and six months ended June 30, 2023. The difference between the consideration transferred and the carrying value of the preferred stock resulted in a gain attributable to common stockholders of $2.5 million for both the three and six months ended June 30, 2023. No shares were repurchased during the three and six months ended June 30, 2022.

Common Stock

Reverse Stock Split

On September 21, 2022, the Company's board of directors approved a one-for-four reverse stock split of its outstanding shares of common stock. The reverse stock split was effected on November 1, 2022 at 5:01 p.m. Eastern Time. At the effective time, every four issued and outstanding shares of the Company's common stock were converted into one share of common stock. No fractional shares were issued in connection with the reverse stock split; instead, each stockholder holding fractional shares was entitled to receive, in lieu of such fractional shares, cash in an amount determined on the basis of the volume weighted average price of the Company's common stock on the NYSE on November 1, 2022. In connection with the reverse stock split, the number of authorized shares of the Company's common stock was also reduced on a one-for-four basis, from 700,000,000 to 175,000,000. The par value of each share of common stock remained unchanged. All per share amounts, common shares outstanding and common equity-based awards for all periods presented have been adjusted on a retroactive basis to reflect the reverse stock split.

Public Offerings

On February 6, 2023, the Company completed a public offering of 10,000,000 shares of its common stock. The underwriters purchased the shares from the Company at a price of $17.59 per share, for net proceeds to the Company of approximately $175.6 million after deducting offering expenses. The underwriters did not exercise any portion of their 30-day overallotment option to purchase up to 1,500,000 additional shares.

As of June 30, 2023, the Company had 96,165,535 shares of common stock outstanding. The following table presents a reconciliation of the common shares outstanding for the six months ended June 30, 2023 and 2022:

	Number of common shares
Common shares outstanding, December 31, 2021	85,977,831
Issuance of common stock	9,038
Non-cash equity award compensation [1]	121,408
Common shares outstanding, June 30, 2022	86,108,277
Common shares outstanding, December 31, 2022	86,428,845
Issuance of common stock	10,125,875
Repurchase of common stock	(593,453)
Non-cash equity award compensation [1]	204,268
Common shares outstanding, June 30, 2023	96,165,535

(1) See Note 17 - *Equity Incentive Plans* for further details regarding the Company's Equity Incentive Plans.

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Notes to the Condensed Consolidated Financial Statements (unaudited)

Distributions to Stockholders

The following table presents cash dividends declared by the Company on its preferred and common stock during the three and six months ended June 30, 2023 and 2022:

(dollars in thousands)	Three Months Ended June 30,				Six Months Ended June 30,			
	2023		2022		2023		2022	
Class of Stock	**Amount**	**Per Share**	**Amount**	**Per Share**	**Amount**	**Per Share**	**Amount**	**Per Share**
Series A Preferred Stock	$ 2,588	$ 0.51	$ 2,920	$ 0.51	$ 5,290	$ 1.02	$ 5,840	$ 1.02
Series B Preferred Stock	$ 5,003	$ 0.48	$ 5,481	$ 0.48	$ 10,109	$ 0.96	$ 10,961	$ 0.96
Series C Preferred Stock	$ 4,524	$ 0.45	$ 5,347	$ 0.45	$ 9,081	$ 0.90	$ 10,694	$ 0.90
Common Stock	$ 43,560	$ 0.45	$ 58,844	$ 0.68	$ 101,941	$ 1.05	$ 117,655	$ 1.36

Dividend Reinvestment and Direct Stock Purchase Plan

The Company sponsors a dividend reinvestment and direct stock purchase plan through which stockholders may purchase additional shares of the Company's common stock by reinvesting some or all of the cash dividends received on shares of the Company's common stock. Stockholders may also make optional cash purchases of shares of the Company's common stock subject to certain limitations detailed in the plan prospectus. The plan allows for the issuance of up to an aggregate of 937,500 shares of the Company's common stock. As of June 30, 2023, 122,113 shares have been issued under the plan for total proceeds of approximately $6.2 million, of which 4,768 and 8,448 shares were issued for total proceeds of $0.1 million and $0.1 million during the three and six months ended June 30, 2023, respectively. During the three and six months ended June 30, 2022, 4,170 and 9,038 shares were issued for a total proceeds of $0.1 million and $0.2 million, respectively.

Common Share Repurchase Program

The Company's common share repurchase program allows for the repurchase of up to an aggregate of 9,375,000 shares of the Company's common stock. Common shares may be repurchased from time to time through privately negotiated transactions or open market transactions, pursuant to a trading plan in accordance with Rules 10b5-1 and 10b-18 under the Exchange Act, or by any combination of such methods. The manner, price, number and timing of common share repurchases are subject to a variety of factors, including market conditions and applicable SEC rules. The common share repurchase program does not require the purchase of any minimum number of shares, and, subject to SEC rules, purchases may be commenced or suspended at any time without prior notice. The common share repurchase program does not have an expiration date. As of June 30, 2023, a total of 3,637,028 shares had been repurchased by the Company under the program for an aggregate cost of $208.5 million, of which 593,453 shares were repurchased for a total cost of $7.1 million during both the three and six months ended June 30, 2023. No shares were repurchased during the three and six months ended June 30, 2022.

At-the-Market Offerings

The Company is party to an equity distribution agreement under which the Company is authorized to sell up to an aggregate of 11,000,000 shares of its common stock from time to time in any method permitted by law deemed to be an "at the market" offering as defined in Rule 415 under the Securities Act of 1933, as amended, or the Securities Act. As of June 30, 2023, 2,300,605 shares of common stock had been sold under the current or prior equity distribution agreements for total accumulated net proceeds of approximately $136.9 million, of which, 117,427 shares were sold for net proceeds of $2.1 million during the six months ended June 30, 2023. No shares were sold during the three months ended June 30, 2023 or the three and six months ended June 30, 2022.

Accumulated Other Comprehensive Loss

Accumulated other comprehensive loss at June 30, 2023 and December 31, 2022 was as follows:

(in thousands)	June 30, 2023	December 31, 2022
Available-for-sale securities:		
Unrealized gains	$ 4,009	$ 47,656
Unrealized losses	(313,095)	(326,367)
Accumulated other comprehensive loss	$ (309,086)	$ (278,711)

Reclassifications out of Accumulated Other Comprehensive Loss

The Company reclassifies unrealized gains and losses on AFS securities in accumulated other comprehensive loss to net income (loss) upon the recognition of any realized gains and losses on sales as individual securities are sold. The Company did not sell any AFS securities with unrealized gains and losses included in accumulated other comprehensive loss during the three months ended June 30, 2023. For the six months ended June 30, 2023 the Company reclassified $63.2 million in unrealized losses on sold AFS securities from accumulated other comprehensive loss to gain (loss) on investment securities on the condensed consolidated statements of comprehensive income (loss). For the three and six months ended June 30, 2022 the Company reclassified $137.6 million and $129.3 million, respectively, in unrealized losses on sold AFS securities from accumulated other comprehensive loss to gain (loss) on investment securities on the condensed consolidated statements of comprehensive income (loss).

Note 17. Equity Incentive Plans

All per share amounts, common shares outstanding and common equity-based awards for all periods presented have been adjusted on a retroactive basis to reflect the reverse stock split.

The Company's Second Restated 2009 Equity Incentive Plan (the 2009 Plan) and the Company's 2021 Equity Incentive Plan (the 2021 Plan), or collectively, the Equity Incentive Plans, provide incentive compensation to attract and retain qualified directors, officers, personnel and other parties who may provide significant services to the Company. The Equity Incentive Plans are administered by the compensation committee of the Company's board of directors. The compensation committee has the full authority to administer and interpret the Equity Incentive Plans, to authorize the granting of awards, to determine the eligibility of potential recipients to receive an award, to determine the number of shares of common stock to be covered by each award (subject to the individual participant limitations provided in the Equity Incentive Plans), to determine the terms, provisions and conditions of each award (which may not be inconsistent with the terms of the Equity Incentive Plans), to prescribe the form of instruments evidencing awards and to take any other actions and make all other determinations that it deems necessary or appropriate in connection with the Equity Incentive Plans or the administration or interpretation thereof. In connection with this authority, the compensation committee may, among other things, establish performance goals that must be met in order for awards to be granted or to vest, or for the restrictions on any such awards to lapse.

The Equity Incentive Plans provide for grants of restricted common stock, restricted stock units, or RSUs, performance-based awards (including performance share units, or PSUs), phantom shares, dividend equivalent rights and other equity-based awards. The 2021 Plan is subject to a ceiling of 4,250,000 shares and the 2009 Plan is subject to a ceiling of 1,625,000 shares of the Company's common stock; however, following stockholder approval of the 2021 Plan in May 2021, no new awards will be granted under the 2009 Plan. Awards previously granted under the 2009 Plan remain outstanding and valid in accordance with their terms. The Equity Incentive Plans allow for the Company's board of directors to expand the types of awards available under the Equity Incentive Plans to include long-term incentive plan units in the future. If an award granted under the Equity Incentive Plans expires or terminates, the shares subject to any portion of the award that expires or terminates without having been exercised or paid, as the case may be, will again become available for the issuance of additional awards. Unless earlier terminated by the Company's board of directors, no new award may be granted under the Equity Incentive Plans after the tenth anniversary of the date that the Equity Incentive Plans were approved by the Company's board of directors. No award may be granted under the Equity Incentive Plans to any person who, assuming payment of all awards held by such person, would own or be deemed to own more than 9.8% of the outstanding shares of the Company's common stock.

Restricted Stock Units

The following table summarizes the activity related to RSUs for the six months ended June 30, 2023 and 2022:

	Six Months Ended June 30,			
	2023		2022	
	Units	Weighted Average Grant Date Fair Market Value	Units	Weighted Average Grant Date Fair Market Value
Outstanding at Beginning of Period	468,632	$ 23.54	293,426	$ 28.39
Granted	371,673	16.19	268,859	20.99
Vested	(204,268)	(23.80)	(122,339)	(28.43)
Forfeited	—	—	(13,152)	(23.69)
Outstanding at End of Period	636,037	$ 19.16	426,794	$ 23.87

The estimated fair value of RSUs on grant date is based on the closing market price of the Company's common stock on the NYSE on such date. The shares underlying RSUs granted to independent directors are subject to a one-year vesting period. RSUs granted to certain eligible employees vest in three equal annual installments commencing on the first anniversary of the grant date, as long as such grantee complies with the terms and conditions of the applicable RSU agreement. All RSUs entitle the grantee to receive dividend equivalent rights, or DERs, during the vesting period. A DER represents the right to receive a payment equal to the amount of cash dividends declared and payable on the grantee's unvested and outstanding equity incentive awards. In the case of RSUs, DERs are paid in cash within 60 days of the quarterly dividend payment date based on the number of unvested and outstanding RSUs held by the grantee on the applicable dividend record date. In the event that an RSU is forfeited, the related DERs which have not yet been paid shall be forfeited.

Performance Share Units

The following table summarizes the activity related to PSUs for the six months ended June 30, 2023 and 2022:

	Six Months Ended June 30,			
	2023		2022	
	Target Units	Weighted Average Grant Date Fair Market Value	Target Units	Weighted Average Grant Date Fair Market Value
Outstanding at Beginning of Period	265,261	$ 26.93	109,356	$ 34.68
Granted	222,208	22.47	151,313	21.80
Vested	—	—	—	—
Forfeited	—	—	(8,223)	(27.28)
Outstanding at End of Period	487,469	$ 24.90	252,446	$ 27.20

The estimated fair value of PSUs on grant date is determined using a Monte Carlo simulation. PSUs vest promptly following the completion of a three year performance period, as long as such grantee complies with the terms and conditions of the applicable PSU award agreement. The number of underlying shares of common stock that vest and that the grantee becomes entitled to receive at the time of vesting will be determined based on the level of achievement of certain Company performance goals during the performance period and will generally range from 0% to 200% of the target number of PSUs granted. All PSUs entitle the grantee to DERs during the vesting period, which accrue in the form of additional PSUs reflecting the value of any dividends declared on the Company's common stock during the vesting period. In the event that a PSU is forfeited, the related accrued DERs shall be forfeited.

Restricted Common Stock

The following table summarizes the activity related to restricted common stock for the six months ended June 30, 2023 and 2022:

	Six Months Ended June 30,			
	2023		2022	
	Shares	Weighted Average Grant Date Fair Market Value	Shares	Weighted Average Grant Date Fair Market Value
Outstanding at Beginning of Period	42,884	$ 60.91	113,239	$ 60.18
Granted	—	—	—	—
Vested	(42,884)	(60.91)	(69,191)	(59.71)
Forfeited	—	—	(930)	(60.92)
Outstanding at End of Period	—	$ —	43,118	$ 60.91

The estimated fair value of restricted common stock on grant date is based on the closing market price of the Company's common stock on the NYSE on such date. The shares underlying restricted common stock grants to independent directors in 2021 vested immediately. The shares underlying restricted common stock grants to independent directors prior to 2021 and shown as vested or forfeited in the table above were subject to a one-year vesting period. The shares underlying restricted common stock grants to the Company's executive officers and other eligible individuals vested in three equal annual installments commencing on the first anniversary of the grant date, as long as such grantee complied with the terms and conditions of the applicable restricted stock award agreement.

Non-Cash Equity Compensation Expense

For the three and six months ended June 30, 2023, the Company recognized compensation related to RSUs, PSUs and restricted common stock granted pursuant to the Equity Incentive Plans of $1.7 million and $7.8 million, respectively. For the three and six months ended June 30, 2022, the Company recognized compensation related to restricted common stock granted pursuant to the Equity Incentive Plans of $3.5 million and $7.6 million, respectively. As of June 30, 2023, the Company had $7.1 million of total unrecognized compensation cost related to unvested share-based compensation arrangements. This cost is expected to be recognized over a weighted average period of 1.6 years.

Note 18. Income Taxes

For the three and six months ended June 30, 2023 and 2022, the Company qualified to be taxed as a REIT under the Code for U.S. federal income tax purposes. As long as the Company qualifies as a REIT, the Company generally will not be subject to U.S. federal income taxes on its taxable income to the extent it annually distributes its net taxable income to stockholders, and does not engage in prohibited transactions. The Company intends to distribute 100% of its REIT taxable income and comply with all requirements to continue to qualify as a REIT. The majority of states also recognize the Company's REIT status. The Company's TRSs file separate tax returns and are fully taxed as standalone U.S. C corporations. It is assumed that the Company will retain its REIT status and will incur no REIT level taxation as it intends to comply with the REIT regulations and annual distribution requirements.

On August 16, 2022, President Biden signed into law the Inflation Reduction Act of 2022, or the IRA, sweeping legislation addressing healthcare, climate change and renewable energy incentives, and inflation, among other priorities. The bill includes numerous tax provisions that impact corporations, including the implementation of a corporate alternative minimum tax as well as a 1% excise tax on certain stock repurchases and economically similar transactions. However, REITs are excluded from the definition of an "applicable corporation" and therefore are not subject to the corporate alternative minimum tax. Additionally, stock repurchases by REITs are specifically excepted from the 1% excise tax. The Company's TRSs operate as standalone corporations and therefore could be adversely affected by the tax law changes. The Company's preliminary analysis of the accounting implications of the IRA result in no impact being recorded to its 2023 financial statements. As the Company completes its analysis of the IRA, collects and prepares necessary data, and interprets any additional guidance, it may make adjustments to the provisional amounts. Technical corrections or other amendments to the IRA or administrative guidance interpreting the IRA may be forthcoming at any time. While the Company does not anticipate a material effect on its operations, it will continue to analyze and monitor the application of the IRA to its business.

TWO HARBORS INVESTMENT CORP.

Notes to the Condensed Consolidated Financial Statements (unaudited)

During the three months ended June 30, 2023, the Company's TRSs recognized a provision for income taxes of $19.8 million, which was primarily due to income from MSR servicing activities and net gains recognized on MSR, offset by net losses recognized on derivative instruments and operating expenses. During the six months ended June 30, 2023, the Company's TRSs recognized a provision for income taxes of $15.9 million, which was primarily due to income from MSR servicing activities, offset by net losses recognized on MSR and derivative instruments as well as operating expenses. During the three and six months ended June 30, 2022, the Company's TRSs recognized a provision for income taxes of $25.9 million and $74.7 million, respectively, which was primarily due to income from MSR servicing activities and gains recognized on MSR, offset by net losses recognized on derivative instruments and operating expenses.

Based on the Company's evaluation, it has been concluded that there are no significant uncertain tax positions requiring recognition in the Company's condensed consolidated financial statements of a contingent tax liability for uncertain tax positions. Additionally, there were no amounts accrued for penalties or interest as of or during the periods presented in these condensed consolidated financial statements.

Note 19. Earnings Per Share

The following table presents a reconciliation of the earnings (loss) and shares used in calculating basic and diluted earnings (loss) per share for the three and six months ended June 30, 2023 and 2022. All per share amounts, common shares outstanding and common equity-based awards for all periods presented have been adjusted on a retroactive basis to reflect the reverse stock split.

	Three Months Ended June 30,		Six Months Ended June 30,	
(in thousands, except share data)	**2023**	**2022**	**2023**	**2022**
Basic Earnings (Loss) Per Share:				
Net income (loss)	$ 197,445	$ (72,420)	$ 20,637	$ 212,850
Dividends on preferred stock	(12,115)	(13,748)	(24,480)	(27,495)
Gain on repurchase and retirement of preferred stock	2,454	—	2,454	—
Dividends and undistributed earnings allocated to participating restricted stock units	(1,233)	(290)	(668)	(910)
Net income (loss) attributable to common stockholders, basic	$ 186,551	$ (86,458)	$ (2,057)	$ 184,445
Basic weighted average common shares	96,387,877	86,069,431	94,492,389	86,034,722
Basic earnings (loss) per weighted average common share	$ 1.94	$ (1.00)	$ (0.02)	$ 2.14
Diluted Earnings (Loss) Per Share:				
Net income (loss) attributable to common stockholders, basic	$ 186,551	$ (86,458)	$ (2,057)	$ 184,445
Reallocation impact of undistributed earnings to participating restricted stock units	120	—	—	(8)
Interest expense attributable to convertible notes	4,692	—	—	9,843
Net income (loss) attributable to common stockholders, diluted	$ 191,363	$ (86,458)	$ (2,057)	$ 194,280
Basic weighted average common shares	96,387,877	86,069,431	94,492,389	86,034,722
Effect of dilutive shares issued in an assumed vesting of performance share units	199,753	—	—	135,870
Effect of dilutive shares issued in an assumed conversion	9,474,748	—	—	9,914,881
Diluted weighted average common shares	106,062,378	86,069,431	94,492,389	96,085,473
Diluted earnings (loss) per weighted average common share	$ 1.80	$ (1.00)	$ (0.02)	$ 2.02

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(1) If applicable, includes a nondiscretionary adjustment for the assumed change in the management fee calculation.

For the three months ended June 30, 2023 and the six months ended June 30, 2022, participating RSUs were included in the calculation of diluted earnings per share under the two-class method since it was more dilutive than the alternative treasury stock method. For the six months ended June 30, 2023 and the three months ended June 30, 2022, excluded from the calculation of diluted loss per share was the effect of adding undistributed earnings reallocated to 650,604 and 443,996 weighted average participating RSUs, respectively, as their inclusion would have been antidilutive.

For the three months ended June 30, 2023 and the six months ended June 30, 2022, the assumed vesting of outstanding PSUs was included in the calculation of diluted earnings per share under the two-class method since it was more dilutive than the alternative treasury stock method. For the six months ended June 30, 2023 and the three months ended June 30, 2022, PSUs were excluded from the calculation of diluted loss per share, as their inclusion would have been antidilutive.

For the three months ended June 30, 2023 and the six months ended June 30, 2022, the assumed conversion of the Company's convertible senior notes was included in the calculation of diluted earnings per share under the if-converted method. For the six months ended June 30, 2023 and the three months ended June 30, 2022 excluded from the calculation of diluted loss per share was the effect of adding back $9.5 million and $4.8 million of interest expense and 9,606,204 and 9,739,163 weighted average common share equivalents, respectively, related to the assumed conversion of the Company's convertible senior notes, as their inclusion would have been antidilutive.

Note 20. Subsequent Events

Events subsequent to June 30, 2023 were evaluated through the date these condensed consolidated financial statements were issued and no other additional events were identified requiring further disclosure in these condensed consolidated financial statements.

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion and analysis should be read in conjunction with the consolidated financial statements and accompanying notes included elsewhere in this Quarterly Report on Form 10-Q as well as our Annual Report on Form 10-K for the year ended December 31, 2022.

General

We are a Maryland corporation focused on investing in and managing Agency residential mortgage-backed securities, or Agency RMBS, mortgage servicing rights, or MSR, and other financial assets, which we collectively refer to as our target assets. We operate as a real estate investment trust, or REIT, as defined under the Internal Revenue Code of 1986, as amended, or the Code.

Our objective is to provide attractive risk-adjusted total return to our stockholders over the long term, primarily through dividends and secondarily through capital appreciation. We acquire and manage an investment portfolio of our target assets, which include the following:

- Agency RMBS (which includes inverse interest-only Agency securities classified as "Agency Derivatives" for purposes of U.S. generally accepted accounting principles, or U.S. GAAP), meaning RMBS whose principal and interest payments are guaranteed by a U.S. government agency, such as the Government National Mortgage Association (or Ginnie Mae), or a U.S. government sponsored enterprise, or GSE, such as the Federal National Mortgage Association (or Fannie Mae) or the Federal Home Loan Mortgage Corporation (or Freddie Mac);
- MSR; and
- Other financial assets comprising approximately 5% to 10% of the portfolio.

Our Agency RMBS portfolio is comprised primarily of fixed rate mortgage-backed securities backed by single-family and multi-family mortgage loans. All of our principal and interest Agency RMBS are Fannie Mae or Freddie Mac mortgage pass-through certificates or collateralized mortgage obligations, or Ginnie Mae mortgage pass-through certificates, which are backed by the guarantee of the U.S. government. The majority of these securities consist of whole pools in which we own all of the investment interests in the securities.

Within our MSR business, we acquire MSR assets, which represent the right to control the servicing of residential mortgage loans and the obligation to service the loans in accordance with relevant standards, from high-quality originators. We do not directly service the mortgage loans underlying the MSR we acquire; rather, we contract with appropriately licensed third-party subservicers to handle substantially all servicing functions in the name of the subservicer. As the servicer of record, however, we remain accountable to the GSEs for all servicing matters and, accordingly, provide substantial oversight of each of our subservicers. We believe MSR are a natural fit for our portfolio over the long term. Our MSR business leverages our core competencies in prepayment and credit risk analytics and the MSR assets provide offsetting risks to our Agency RMBS, hedging both interest rate and mortgage spread risk.

On August 2, 2022, Matrix Financial Services Corporation, or Matrix, one of our wholly owned subsidiaries, entered into a definitive stock purchase agreement to acquire RoundPoint Mortgage Servicing LLC (formerly RoundPoint Mortgage Servicing Corporation), or RoundPoint, from Freedom Mortgage Corporation. In connection with the acquisition, Matrix has agreed to pay a purchase price upon closing in an amount equal to the tangible net book value of RoundPoint, plus a premium amount of $10.5 million, subject to certain additional post-closing adjustments. In connection with the transaction, RoundPoint will divest its retail origination business as well as its RPX servicing exchange platform. Matrix also agreed to engage RoundPoint as a subservicer prior to the closing date and began transferring loans to RoundPoint in the fourth quarter of 2022. Upon closing, all servicing licenses and operational capabilities will remain with RoundPoint, and RoundPoint will become a wholly owned subsidiary of Matrix. The parties expect to close the transaction in 2023, subject to the satisfaction of customary closing conditions and the receipt of required regulatory and GSE approvals.

For the three months ended June 30, 2023, our net spread realized on the portfolio was lower than recent quarters due primarily to higher cost of financing due to rising interest rates, offset by higher coupon and lower amortization on Agency RMBS due to slower prepayment speeds and the higher yielding MSR making up a larger proportion of the portfolio. The following table provides the average portfolio yield and cost of financing on our assets for the three months ended June 30, 2023, and the four immediately preceding quarters:

	Three Months Ended				
	June 30, 2023	**March 31, 2023**	**December 31, 2022**	**September 30, 2022**	**June 30, 2022**
Average portfolio yield [(1)]	5.24%	5.09%	4.92%	4.61%	4.39%
Average cost of financing [(2)]	5.08%	4.57%	3.95%	2.84%	1.13%
Net spread	0.16%	0.52%	0.97%	1.77%	3.26%

(1) Average portfolio yield includes interest income on Agency and non-Agency investment securities and MSR servicing income, net of estimated amortization, and servicing expenses. MSR estimated amortization refers to the portion of change in fair value of MSR primarily attributed to the realization of expected cash flows (runoff) of the portfolio, which is deemed a non-GAAP measure due to the company's decision to account for MSR at fair value. TBA dollar roll income is the non-GAAP economic equivalent to holding and financing Agency RMBS using short-term repurchase agreements.

(2) Average cost of financing includes interest expense and amortization of deferred debt issuance costs on borrowings under repurchase agreements (excluding those collateralized by U.S. Treasuries), revolving credit facilities, term notes payable and convertible senior notes and interest spread income/expense and amortization of upfront payments made or received upon entering into interest rate swap agreements. Beginning with the three months ended September 30, 2022, average cost of financing also includes U.S. Treasury futures income, which represents the economic equivalent to holding and financing a relevant cheapest-to-deliver U.S. Treasury note or bond using short-term repurchase agreements.

We seek to deploy moderate leverage as part of our investment strategy. We generally finance our Agency RMBS through short- and long-term borrowings structured as repurchase agreements. We also finance our MSR through revolving credit facilities, repurchase agreements, term notes payable and convertible senior notes.

Our Agency RMBS, given their liquidity and high credit quality, are eligible for higher levels of leverage, while MSR, with less liquidity and/or more exposure to prepayment, utilize lower levels of leverage. As a result, our debt-to-equity ratio is determined by our portfolio mix as well as many additional factors, including the liquidity of our portfolio, the availability and price of our financing, the diversification of our counterparties and their available capacity to finance our assets, and anticipated regulatory developments. Our debt-to-equity ratio is also directly correlated to the composition of our portfolio; specifically, the higher percentage of Agency RMBS we hold, the higher our debt-to-equity ratio is. We may alter the percentage allocation of our portfolio among our target assets depending on the relative value of the assets that are available to purchase from time to time, including at times when we are deploying proceeds from offerings we conduct. See Item 2, "*Management's Discussion and Analysis of Financial Condition and Results of Operations - Financial Condition - Financing*" for further discussion.

We recognize that investing in our target assets is competitive and we compete with other entities for attractive investment opportunities. We believe that our significant focus in the residential market, the extensive mortgage market expertise of our investment team, our operational capabilities to invest in MSR, our strong analytics and our disciplined relative value investment approach give us a competitive advantage versus our peers.

We have elected to be treated as a REIT for U.S. federal income tax purposes. To qualify as a REIT we are required to meet certain investment and operating tests and annual distribution requirements. We generally will not be subject to U.S. federal income taxes on our taxable income to the extent that we annually distribute all of our net taxable income to stockholders, do not participate in prohibited transactions and maintain our intended qualification as a REIT. However, certain activities that we may perform may cause us to earn income which will not be qualifying income for REIT purposes. We have designated certain of our subsidiaries as taxable REIT subsidiaries, or TRSs, as defined in the Code, to engage in such activities. We also operate our business in a manner that will permit us to maintain our exemption from registration under the Investment Company Act of 1940, as amended, or the 1940 Act. While we do not currently originate or directly service residential mortgage loans, certain of our subsidiaries have obtained the requisite licenses and approvals to own and manage MSR.

Forward-Looking Statements

This Quarterly Report on Form 10-Q contains, or incorporates by reference, not only historical information, but also forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, or the Exchange Act, and that are subject to the safe harbors created by such sections. Forward-looking statements involve numerous risks and uncertainties. Our actual results may differ from our beliefs, expectations, estimates, and projections and, consequently, you should not rely on these forward-looking statements as predictions of future events. Forward-looking statements are not historical in nature and can be identified by words such as "anticipate," "estimate," "will," "should," "expect," "target," "believe," "intend," "seek," "plan," "goals," "future," "likely," "may" and similar expressions or their negative forms, or by references to strategy, plans, or intentions. These forward-looking statements are subject to risks and uncertainties, including, among other things, those described in our Annual Report on Form 10-K for the year ended December 31, 2022, under the caption "Risk Factors." Other risks, uncertainties and factors that could cause actual results to differ materially from those projected are described below and may be described from time to time in reports we file with the Securities and Exchange Commission, or SEC, including our Quarterly Reports on Form 10-Q and Current Reports on Form 8-K. Forward-looking statements speak only as of the date they are made, and we undertake no obligation to update or revise any such forward-looking statements, whether as a result of new information, future events, or otherwise.

Important factors, among others, that may affect our actual results include:

- changes in interest rates and the market value of our target assets;
- changes in prepayment rates of mortgages underlying our target assets;
- the state of the credit markets and other general economic conditions, particularly as they affect the price of earning assets, the credit status of borrowers and home prices;
- legislative and regulatory actions affecting our business;
- the availability and cost of our target assets;
- the availability and cost of financing for our target assets, including repurchase agreement financing, revolving credit facilities, term notes and convertible notes;
- the impact of any increases in payment delinquencies and defaults on the mortgages comprising and underlying our target assets, including additional servicing costs and servicing advance obligations on the MSR assets we own;
- changes in liquidity in the market for real estate securities, the re-pricing of credit risk in the capital markets, inaccurate ratings of securities by rating agencies, rating agency downgrades of securities, and increases in the supply of real estate securities available-for-sale;
- changes in the values of securities we own and the impact of adjustments reflecting those changes on our condensed consolidated statements of comprehensive income (loss) and balance sheets, including our stockholders' equity;
- our ability to generate cash flow from our target assets;
- our ability to effectively execute and realize the benefits of strategic transactions and initiatives we have pursued or may in the future pursue;
- our ability to recognize the benefits of our pending acquisition of RoundPoint Mortgage Servicing LLC;
- our decision to terminate our Management Agreement with PRCM Advisers LLC and the ongoing litigation related to such termination;
- changes in the competitive landscape within our industry, including changes that may affect our ability to attract and retain personnel;
- our exposure to legal and regulatory claims, penalties or enforcement activities, including those arising from our ownership and management of MSR and prior securitization transactions;
- our exposure to counterparties involved in our MSR business and prior securitization transactions and our ability to enforce representations and warranties made by them;
- our ability to acquire MSR and successfully operate our seller-servicer subsidiary and oversee the activities of our subservicers;
- our ability to manage various operational and regulatory risks associated with our business;
- interruptions in or impairments to our communications and information technology systems;
- our ability to maintain appropriate internal controls over financial reporting;
- our ability to establish, adjust and maintain appropriate hedges for the risks in our portfolio;
- our ability to maintain our REIT qualification for U.S. federal income tax purposes; and
- limitations imposed on our business due to our REIT status and our status as exempt from registration under the 1940 Act.

This Quarterly Report on Form 10-Q may contain statistics and other data that, in some cases, have been obtained or compiled from information made available by mortgage loan servicers and other third-party service providers.

Factors Affecting our Operating Results

Our net interest income includes income from our securities portfolio, including the amortization of purchase premiums and accretion of purchase discounts. Net interest income, as well as our servicing income, net of subservicing expenses, will fluctuate primarily as a result of changes in market interest rates, our financing costs and prepayment speeds on our assets. Interest rates, financing costs and prepayment rates vary according to the type of investment, conditions in the financial markets, competition and other factors, none of which can be predicted with any certainty.

Fair Value Measurement

A significant portion of our assets and liabilities are reported at fair value and, therefore, our condensed consolidated balance sheets and statements of comprehensive income (loss) are significantly affected by fluctuations in market prices. At June 30, 2023, approximately 87.5% of our total assets, or $12.3 billion, consisted of financial instruments recorded at fair value. See Note 10 - *Fair Value* to the condensed consolidated financial statements, included in this Quarterly Report on Form 10-Q, for descriptions of valuation methodologies used to measure material assets and liabilities at fair value and details of the valuation models, key inputs to those models and significant assumptions utilized. Although we execute various hedging strategies to mitigate our exposure to changes in fair value, we cannot fully eliminate our exposure to volatility caused by fluctuations in market prices.

Any temporary change in the fair value of our AFS securities, excluding certain AFS securities for which we have elected the fair value option, is recorded as a component of accumulated other comprehensive loss and does not impact our reported income (loss) for U.S. GAAP purposes, or GAAP net income (loss). However, changes in the provision for credit losses on AFS securities are recognized immediately in GAAP net income (loss). Our GAAP net income (loss) is also affected by fluctuations in market prices on the remainder of our financial assets and liabilities recorded at fair value, including interest rate swap, cap and swaption agreements and certain other derivative instruments (*i.e.*, Agency to-be-announced securities, or TBAs, options on TBAs, futures, options on futures, and inverse interest-only securities), which are accounted for as derivative trading instruments under U.S. GAAP, fair value option elected AFS securities and MSR.

We have numerous internal controls in place to help ensure the appropriateness of fair value measurements. Significant fair value measures are subject to detailed analytics and management review and approval. Our entire investment portfolio reported at fair value is priced by third-party brokers and/or by independent pricing vendors. We generally receive three or more broker and vendor quotes on pass-through Agency P&I RMBS, and generally receive multiple broker or vendor quotes on all other securities, including interest-only Agency RMBS, and inverse interest-only Agency RMBS and other Agency securities. We also receive multiple vendor quotes for the MSR in our investment portfolio. For Agency securities, the third-party pricing vendors and brokers use pricing models that commonly incorporate such factors as coupons, primary and secondary mortgage rates, rate reset periods, issuer, prepayment speeds, credit enhancements and expected life of the security. For MSR, vendors use pricing models that generally incorporate observable inputs such as principal balance, note rate, geographical location, loan-to-value (LTV) ratios, FICO, appraised value and other loan characteristics, along with observed market yields and trading levels. Pricing vendors will customarily incorporate servicing fee, ancillary income, and earnings rate on escrow as observable inputs. Unobservable or model-driven inputs include forecast per loan annual cost to service, forecast cumulative defaults, default curve, forecast loss severity and forecast voluntary prepayment.

We evaluate the prices we receive from both third-party brokers and pricing vendors by comparing those prices to actual purchase and sale transactions, our internally modeled prices calculated based on market observable rates and credit spreads, and to each other both in current and prior periods. We review and may challenge valuations from third-party brokers and pricing vendors to ensure that such quotes and valuations are indicative of fair value as a result of this analysis. We then estimate the fair value of each security based upon the median of the final broker quotes received, and we estimate the fair value of MSR based upon the average of prices received from third-party vendors, subject to internally-established hierarchy and override procedures.

We utilize “bid side” pricing for our Agency securities and, as a result, certain assets, especially the most recent purchases, may realize a markdown due to the “bid-offer” spread. To the extent that this occurs on available-for-sale securities not accounted for under the fair value option, any economic effect of this would be reflected in accumulated other comprehensive loss.

Considerable judgment is used in forming conclusions and estimating inputs to our Level 3 fair value measurements. Level 3 inputs such as interest rate movements, prepayments speeds, credit losses and discount rates are inherently difficult to estimate. Changes to these inputs can have a significant effect on fair value measurements. Accordingly, there is no assurance that our estimates of fair value are indicative of the amounts that would be realized on the ultimate sale or exchange of these assets. At June 30, 2023, 24.0% of our total assets were classified as Level 3 fair value assets.

Critical Accounting Estimates

The preparation of financial statements in accordance with U.S. GAAP requires us to make certain judgments and assumptions, based on information available at the time of our preparation of the financial statements, in determining accounting estimates used in preparation of the statements. Accounting estimates are considered critical if the estimate requires us to make assumptions about matters that were highly uncertain at the time the accounting estimate was made and if different estimates reasonably could have been used in the reporting period or changes in the accounting estimate are reasonably likely to occur from period to period that would have a material impact on our financial condition, results of operations or cash flows. Our significant accounting policies are described in Note 2 to the consolidated financial statements, included under Item 8 of our Annual Report on Form 10-K for the year ended December 31, 2022. Our most critical accounting policies involve our fair valuation of AFS securities, MSR and derivative instruments.

The methods used by us to estimate fair value for AFS securities, MSR and derivative instruments may produce a fair value calculation that may not be indicative of net realizable value or reflective of future fair values. Furthermore, while we believe that our valuation methods are appropriate and consistent with other market participants, the use of different methodologies, or assumptions, to determine the fair value of certain financial instruments could result in a different estimate of fair value at the reporting date. We use prices obtained from third-party pricing vendors or broker quotes deemed indicative of market activity and current as of the measurement date, which in periods of market dislocation, may have reduced transparency. For more information on our fair value measurements, see Note 10 to the condensed consolidated financial statements, included under Item 1 of this Quarterly Report on Form 10-Q. Additionally, the key economic assumptions and sensitivity of the fair value of MSR to immediate adverse changes in these assumptions are presented in Note 5 to the condensed consolidated financial statements, included under Item 1 of this Quarterly Report on Form 10-Q.

Market Conditions and Outlook

Market sentiment at the end of the second quarter was very different than when the quarter began. Initially, market participants were faced with ongoing concerns about stress in banking system that arose in the first quarter coupled with questions as to whether and how a divided Federal government would address lifting the debt ceiling ahead of an early June deadline. For most of the first two months of the quarter, spreads for mortgage-backed securities (MBS) widened. The deal struck to raise the debt ceiling at the tail end of May, together with growing confidence that the worst of the bank stress was in the past, resulted in strong performance of equities and MBS by the end of the quarter as investors shifted their focus back to economic fundamentals such as growth and inflation and how the Federal Reserve, or the Fed, will respond.

The Fed hiked interest rates only once during the quarter to 5.25% at their May meeting. Statements from Fed Chair Jerome Powell made it clear that although the Fed held off hiking interest rates at their June meeting, it was likely that they may hike interest rates two more times during 2023 in an effort to slow the economy and drive down inflation to their 2% target. Inflation continued to show signs of slowing down but still stayed elevated. Headline CPI came in weaker than consensus three months in a row ending at 4% year over year, but core CPI remained sticky at 5.3%. Strength in the jobs market was evident as the non-farm payroll surprised to the upside in two out of the three months and the unemployment rate remained persistently low at around 3.5%. Two more interest rate hikes would push the Fed Funds rate to 5.75%. Based on expectations of sticky inflation and a strong labor market, the hawkish sentiment from the Fed resulted in higher interest rates over the quarter, led by the front end of the U.S. Treasury yield curve. The yield on the 2-year Treasury note increased by 87 basis points to finish at 4.90%, while the 10-year Treasury bond increased by 37 basis points to 3.84%. The re-inversion of the yield curve, to 106 basis points between 2- and 10-year Treasuries, matches the record level touched in early March 2023 before the banking crisis.

In aggregate, despite current coupon spreads being slightly wider over the second quarter, MBS performed well over the quarter, finishing with two consecutive months (May and June) of positive excess return on the Bloomberg MBS Index. After a challenging beginning to the quarter, spreads tightened across the coupon stack once the threat of a U.S. default was off the table. Realized volatility was also low in the month of June, improving hedge adjusted returns, particularly for production coupon MBS. Nominal and option-adjusted spreads for current coupon MBS net widened by 8 basis points to the Treasury curve, finishing at plus 140 and plus 44 basis points respectively, substantially recovering most of the widening that took nominal spreads out as wide at plus 166 basis points in late May. Lower coupons outperformed as supply fears from FDIC sales of seized bank assets waned. Met with strong money manager demand and ahead of schedule, approximately 60% of the $85 billion of supply from the FDIC had been sold.

Thirty-year mortgage rates increased by 39 basis points to finish the second quarter at 6.71%, keeping 99% of the mortgage universe deeply out of the refinancing window and leaving prepayment speeds on aggregate at historically low levels. Prepayment speeds for 30-year conventional mortgages were 5.6% CPR in the second quarter, up sharply from 4.2% CPR in the first quarter, reflecting the increase in housing turnover in the spring. In fact, the seasonality that we have observed was even stronger than normal as spring seasonals were accompanied by a rebounding housing market. Thus far in 2023, housing prices are up in 47 of 50 states as demand continues to outstrip supply. All-cash purchases and homebuilder buydowns have supported demand despite mortgage rates at their highest level in 20 years. We are closely watching inventory levels for any sign of a slowdown, but for now, locked-in homeowners who wish to move are choosing to rent their old house rather than selling it, which continues to depress prepayment speeds and for-sale supply.

RMBS funding remained stable and liquid as the repo market waited for data and Fed meetings throughout the quarter. The uncertainty of rates contributed to a slight increase in spreads to SOFR. In term markets levels were SOFR plus 16 to 22 basis points.

There continued to be a very healthy supply of MSR bulk deals with $145 billion UPB offered in the second quarter. Halfway through the year there has already been $370 billion UPB offered, which puts 2023 on track to surpass the record $510 billion UPB in 2022. Despite the heavy volumes, MSR packages remain well bid with many packages receiving a low double-digit number of bids. Notably, bank demand for MSR has stayed strong despite the pressures that affected some in the first quarter.

Looking ahead, with nominal spreads for current coupon MBS still above the 90th percentile of long-term history and ample opportunity to add MSR at attractive levels, we are optimistic about being able to generate levered returns supportive of our strategy. Though the supply pressure that we profiled in last quarter's outlook has eased somewhat, in the assumed absence of demand from banks, organic supply for the remainder of the year will likely be a headwind for MBS spread tightening. That said, at current yield and spread levels we anticipate that inflows into the fixed-income and the MBS sector specifically will remain strong, providing good support for spreads. Prepayment speeds are also expected to slow back down into the third quarter, reflecting higher mortgage rates and weaker seasonal factors, enhancing returns on our MSR investments.

The following table provides the carrying value of our investment portfolio by asset type:

(dollars in thousands)	June 30, 2023		December 31, 2022	
Agency RMBS	$ 8,887,839	72.6 %	$ 7,668,752	71.1 %
Mortgage servicing rights	3,273,956	26.7 %	2,984,937	27.7 %
Other	87,808	0.7 %	125,158	1.2 %
Total	$ 12,249,603		$ 10,778,847	

Prepayment speeds and volatility due to interest rates

Our portfolio is subject to market risks, primarily interest rate risk and prepayment risk. We seek to offset a portion of our Agency pool market value exposure through our MSR and interest-only Agency RMBS portfolios. During periods of decreasing interest rates with rising prepayment speeds, the market value of our Agency pools generally increases and the market value of our interest-only securities and MSR generally decreases. The inverse relationship occurs when interest rates rise and prepayments fall. Average prepayment speeds for our portfolio increased from the prior quarter predominantly due to seasonal factors, though remain historically slow as noted above. In addition to changes in interest rates, changes in home price performance, key employment metrics and government programs, among other macroeconomic factors, can affect prepayment speeds. We believe our active portfolio management approach, including our asset selection process, positions us to respond to a variety of market scenarios. Although we are unable to predict future interest rate movements, our strategy of pairing Agency RMBS with MSR, with a focus on managing various associated risks, including interest rate, prepayment, credit, mortgage spread and financing risk, is intended to generate attractive yields with a low level of sensitivity to changes in the yield curve, prepayments and interest rate cycles.

The following table provides the three-month average constant prepayment rate, or CPR, experienced by our Agency RMBS and MSR during the three months ended June 30, 2023, and the four immediately preceding quarters:

	Three Months Ended				
	June 30, 2023	March 31, 2023	December 31, 2022	September 30, 2022	June 30, 2022
Agency RMBS	6.5 %	5.3 %	5.9 %	9.1 %	14.2 %
Mortgage servicing rights	5.5 %	4.1 %	4.6 %	6.9 %	10.0 %

Our Agency RMBS are primarily collateralized by pools of fixed-rate mortgage loans. Our Agency portfolio also includes securities with implicit prepayment protection, including lower loan balances (securities collateralized by loans of less than $300,000 in initial principal balance), higher LTVs (securities collateralized by loans with LTVs greater than or equal to 80%), certain geographic concentrations, loans secured by investor-owned properties and lower FICO scores. Our overall allocation of Agency RMBS and holdings of pools with specific characteristics are viewed in the context of our aggregate portfolio strategy, including MSR and related derivative hedging instruments. Additionally, the selection of securities with certain attributes is driven by the perceived relative value of the securities, which factors in the opportunities in the marketplace, the cost of financing and the cost of hedging interest rate, prepayment, credit and other portfolio risks. Accordingly, our Agency RMBS capital allocation reflects management's flexible approach to investing in the marketplace.

The following tables provide the carrying value of our Agency RMBS portfolio by underlying mortgage loan rate type:

	June 30, 2023							
(dollars in thousands)	**Principal/ Current Face**	**Carrying Value**	**Weighted Average CPR [1]**	**% Prepayment Protected**	**Gross Weighted Average Coupon Rate**	**Amortized Cost**	**Allowance for Credit Losses**	**Weighted Average Loan Age (months)**
Agency RMBS AFS:								
30-Year Fixed:								
≤ 2.5%	$ 248,359	$ 210,691	5.6 %	— %	3.3 %	$ 212,258	$ —	24
3.0%	—	—	— %	— %	— %	—	—	—
3.5%	80,345	73,252	4.8 %	75.0 %	4.3 %	74,330	—	17
4.0%	527,035	498,087	7.4 %	100.0 %	4.6 %	532,260	—	43
4.5%	2,888,747	2,796,194	9.1 %	100.0 %	5.2 %	2,948,434	—	31
5.0%	2,793,154	2,754,115	7.2 %	100.0 %	5.8 %	2,846,278	—	14
5.5%	1,404,449	1,403,772	5.6 %	99.8 %	6.4 %	1,418,474	—	12
6.0%	809,895	821,564	9.3 %	99.8 %	6.9 %	830,610	—	11
≥ 6.5%	9,435	9,811	10.7 %	97.7 %	7.8 %	10,176	—	246
	8,761,419	8,567,486	7.7 %	97.3 %	5.6 %	8,872,820	—	21
Other P&I	286,991	278,016	3.4 %	— %	5.1 %	278,824	—	12
Interest-only	781,081	29,893	11.1 %	— %	5.4 %	39,157	(5,087)	149
Agency Derivatives	179,542	12,444	9.9 %	— %	6.7 %	18,908	—	220
Total Agency RMBS	$ 10,009,033	$ 8,887,839		93.8 %		$ 9,209,709	$ (5,087)	

(dollars in thousands)	December 31, 2022 Principal/ Current Face	Carrying Value	Weighted Average CPR (1)	% Prepayment Protected	Gross Weighted Average Coupon Rate	Amortized Cost	Allowance for Credit Losses	Weighted Average Loan Age (months)
Agency RMBS AFS:								
30-Year Fixed:								
≤ 2.5%	$ —	$ —	— %	— %	— %	$ —	$ —	—
3.0%	—	—	— %	— %	— %	—	—	—
3.5%	—	—	— %	— %	— %	—	—	—
4.0%	1,459,733	1,382,120	3.9 %	100.0 %	4.6 %	1,474,169	—	20
4.5%	3,087,310	3,006,356	5.9 %	100.0 %	5.2 %	3,152,567	—	25
5.0%	2,439,709	2,430,470	6.5 %	100.0 %	5.7 %	2,506,339	—	10
5.5%	206,504	209,351	2.0 %	98.4 %	6.2 %	211,992	—	41
6.0%	194,834	199,467	5.3 %	99.2 %	6.7 %	200,776	—	18
≥ 6.5%	10,561	11,138	13.1 %	97.7 %	7.8 %	11,431	—	243
	7,398,651	7,238,902	5.6 %	99.9 %	5.3 %	7,557,274	—	19
Other P&I	382,626	378,558	1.3 %	88.5 %	5.4 %	379,837	—	30
Interest-only	963,865	36,116	8.1 %	— %	4.9 %	45,882	(6,785)	143
Agency Derivatives	196,457	15,176	8.4 %	— %	6.7 %	20,696	—	216
Total Agency RMBS	$ 8,941,599	$ 7,668,752		98.7 %		$ 8,003,689	$ (6,785)	

(1) Weighted average actual one-month CPR released at the beginning of the following month based on RMBS held as of the preceding month-end.

Our MSR business offers attractive spreads and has many risk reducing characteristics when paired with our Agency RMBS portfolio. The following table summarizes activity related to the unpaid principal balance, or UPB, of loans underlying our MSR portfolio for the three months ended June 30, 2023, and the four immediately preceding quarters:

(in thousands)	Three Months Ended June 30, 2023	March 31, 2023	December 31, 2022	September 30, 2022	June 30, 2022
UPB at beginning of period	$ 212,444,503	$ 204,876,693	$ 206,613,560	$ 227,074,413	$ 229,415,913
Purchases of mortgage servicing rights	14,773,601	11,381,496	2,677,674	4,448,870	5,720,323
Sales of mortgage servicing rights	—	(142,598)	—	(19,807,427)	—
Scheduled payments	(1,594,693)	(1,527,309)	(1,538,046)	(1,564,465)	(1,697,237)
Prepaid	(2,993,493)	(2,119,541)	(2,439,936)	(3,709,416)	(6,026,461)
Other changes	(7,741)	(24,238)	(436,559)	171,585	(338,125)
UPB at end of period	$ 222,622,177	$ 212,444,503	$ 204,876,693	$ 206,613,560	$ 227,074,413

Counterparty exposure and leverage ratio

We monitor counterparty exposure amongst our broker, banking and lending counterparties on a daily basis. We believe our broker and banking counterparties are well-capitalized organizations, and we attempt to manage our cash balances across these organizations to reduce our exposure to any single counterparty.

As of June 30, 2023, we had entered into repurchase agreements with 38 counterparties, 19 of which had outstanding balances. In addition, we held short- and long-term borrowings under revolving credit facilities, term notes payable and unsecured convertible senior notes. As of June 30, 2023, the debt-to-equity ratio funding our Agency and non-Agency investment securities, MSR and servicing advances, which includes unsecured borrowings under convertible senior notes, was 5.0:1.0.

As of June 30, 2023, we held $699.1 million in cash and cash equivalents, approximately $0.8 million of unpledged Agency securities and $7.6 million of unpledged non-Agency securities. As a result, we had an overall estimated unused borrowing capacity on our unpledged securities of approximately $5.3 million. As of June 30, 2023, we held approximately $61.2 million of unpledged MSR and $32.5 million of unpledged servicing advances. Overall, on June 30, 2023, we had $85.4 million unused committed and $342.3 million unused uncommitted borrowing capacity on MSR financing facilities, and $157.0 million in unused committed borrowing capacity on servicing advance financing facilities. Generally, unused borrowing capacity may be the result of our election not to utilize certain financing, as well as delays in the timing in which funding is provided, insufficient collateral or the inability to meet lenders' eligibility requirements for specific types of asset classes.

We also monitor exposure to our MSR counterparties. We may be required to make representations and warranties to investors in the loans underlying the MSR we own; however, some of our MSR were purchased on a bifurcated basis, meaning the representation and warranty obligations remain with the seller. If the representations and warranties we make prove to be inaccurate, we may be obligated to repurchase certain mortgage loans, which may impact the profitability of our portfolio. Although we obtain similar representations and warranties from the counterparty from which we acquired the relevant asset, if those representations and warranties do not directly mirror those we make to the investor, or if we are unable to enforce the representations and warranties against the counterparty for a variety of reasons, including the financial condition or insolvency of the counterparty, we may not be able to seek indemnification from our counterparties for any losses attributable to the breach.

LIBOR transition

The London Interbank Offered Rate, or LIBOR, has been used extensively in the U.S. and globally as a "benchmark" or "reference rate" for various commercial and financial contracts, including corporate and municipal bonds and loans, floating rate mortgages, asset-backed securities, consumer loans, and interest rate swaps and other derivatives. On March 5, 2021, Intercontinental Exchange Inc. announced that ICE Benchmark Administration Limited, the administrator of LIBOR, intends to stop publication of the majority of USD-LIBOR tenors on June 30, 2023. In the U.S., the Alternative Reference Rates Committee, or ARRC, has identified the Secured Overnight Financing Rate, or SOFR, and, in some cases, the forward-looking term rate based on SOFR published by CME Group Benchmark Administration Limited, or Term SOFR, plus, in each case, a recommended spread adjustment, as its preferred alternative rates for U.S. dollar-based LIBOR. SOFR is a measure of the cost of borrowing cash overnight, collateralized by U.S. Treasury securities, and is based on directly observable U.S. Treasury-backed repurchase transactions. Numerous industry wide and company-specific transitions as it relates to derivatives and cash markets exposed to LIBOR were completed in connection with its phase-out on June 30, 2023. Our material contracts that are or were indexed to USD-LIBOR have been amended to transition to an alternative benchmark, where necessary. Any other unmodified agreements that incorporate LIBOR as the referenced rate either (i) already had provisions in place that provide for an alternative to LIBOR upon its phase-out, (ii) matured or (iii) were terminated prior to June 30, 2023.

Summary of Results of Operations and Financial Condition

All per share amounts, common shares outstanding and common equity-based awards for all periods presented have been adjusted on a retroactive basis to reflect the one-for-four reverse stock split effected on November 1, 2022.

Our book value per common share for U.S. GAAP purposes was $16.39 at June 30, 2023, a decrease from $16.48 per common share at March 31, 2023, and a decrease from $17.72 per common share at December 31, 2022. The decline in book value for the three months ended June 30, 2023 was primarily driven by dividends declared in the quarter as well as net widening of mortgage spreads, offset by income on MSR and derivatives and the repurchase of common and preferred stock at favorable prices. The decline in book value for the six months ended June 30, 2023 was primarily the result of net widening in mortgage spreads, net losses on derivatives and the dividends declared year-to-date, offset by net income on MSR and the repurchase of common and preferred stock at favorable prices.

Our GAAP net income attributable to common stockholders was $187.8 million and GAAP net loss attributable to common stockholders was $1.4 million ($1.80 and $(0.02) per diluted weighted average share) for the three and six months ended June 30, 2023, respectively, as compared to GAAP net loss attributable to common stockholders of $86.2 million and GAAP net income attributable to common stockholders of $185.4 million ($(1.00) and $2.02 per diluted weighted average share) for the three and six months ended June 30, 2022, respectively.

With our accounting treatment for AFS securities, unrealized fluctuations in the market values of AFS securities, excluding certain AFS securities for which we have elected the fair value option and securities with an allowance for credit losses, do not impact our GAAP net income (loss) or taxable income but are recognized on our condensed consolidated balance sheets as a change in stockholders' equity under "accumulated other comprehensive loss." For the three and six months ended June 30, 2023, net unrealized losses on AFS securities recognized as other comprehensive loss were $156.3 million and $93.6 million, respectively. Additionally, we reclassify unrealized gains and losses on AFS securities in accumulated other comprehensive loss to net income (loss) upon the recognition of any realized gains and losses on sales as individual securities are sold. We did not sell any AFS securities with unrealized gains and losses included in accumulated other comprehensive loss during the three months ended June 30, 2023. For the six months ended June 30, 2023 we reclassified $63.2 million in unrealized losses on sold AFS securities from accumulated other comprehensive loss to gain (loss) on investment securities on the condensed consolidated statements of comprehensive income (loss).

The following tables present the components of our comprehensive income (loss) for the three and six months ended June 30, 2023 and 2022:

(in thousands, except share data) **Income Statement Data:**	**Three Months Ended June 30,**		**Six Months Ended June 30,**	
	2023	**2022**	**2023**	**2022**
	(unaudited)		(unaudited)	
Interest income:				
Available-for-sale securities	$ 104,195	$ 55,399	$ 201,233	$ 100,046
Other	13,567	1,604	33,122	1,803
Total interest income	117,762	57,003	234,355	101,849
Interest expense:				
Repurchase agreements	116,946	19,269	221,301	27,612
Revolving credit facilities	29,684	9,106	55,340	14,782
Term notes payable	8,239	3,925	15,882	7,181
Convertible senior notes	4,692	4,801	9,528	9,843
Total interest expense	159,561	37,101	302,051	59,418
Net interest (expense) income	(41,799)	19,902	(67,696)	42,431
Other income (loss):				
Gain (loss) on investment securities	2,172	(197,719)	12,970	(250,061)
Servicing income	175,223	157,526	328,543	294,152
Gain (loss) on servicing asset	21,679	85,557	(6,400)	496,181
Gain (loss) on interest rate swap and swaption agreements	56,533	32,734	(25,621)	(5,307)
Gain (loss) on other derivative instruments	47,161	(101,273)	(108,610)	(203,035)
Other income (loss)	2,200	(73)	2,200	(117)
Total other income (loss)	304,968	(23,248)	203,082	331,813
Expenses:				
Servicing expenses	25,190	22,991	53,556	47,695
Compensation and benefits	8,868	11,019	22,951	23,212
Other operating expenses	11,886	9,152	22,370	15,777
Total expenses	45,944	43,162	98,877	86,684
Income (loss) before income taxes	217,225	(46,508)	36,509	287,560
Provision for income taxes	19,780	25,912	15,872	74,710
Net income (loss)	197,445	(72,420)	20,637	212,850
Dividends on preferred stock	(12,115)	(13,748)	(24,480)	(27,495)
Gain on repurchase and retirement of preferred stock	2,454	—	2,454	—
Net income (loss) attributable to common stockholders	$ 187,784	$ (86,168)	$ (1,389)	$ 185,355
Basic earnings (loss) per weighted average common share	$ 1.94	$ (1.00)	$ (0.02)	$ 2.14
Diluted earnings (loss) per weighted average common share	$ 1.80	$ (1.00)	$ (0.02)	$ 2.02
Dividends declared per common share	$ 0.45	$ 0.68	$ 1.05	$ 1.36
Weighted average number of shares of common stock:				
Basic	96,387,877	86,069,431	94,492,389	86,034,722
Diluted	106,062,378	86,069,431	94,492,389	96,085,473

(in thousands) **Income Statement Data:**	Three Months Ended June 30, 2023	Three Months Ended June 30, 2022	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022
	(unaudited)		(unaudited)	
Comprehensive income (loss):				
Net income (loss)	$ 197,445	$ (72,420)	$ 20,637	$ 212,850
Other comprehensive loss:				
Unrealized loss on available-for-sale securities	(156,306)	(4,211)	(30,375)	(336,056)
Other comprehensive loss	(156,306)	(4,211)	(30,375)	(336,056)
Comprehensive income (loss)	41,139	(76,631)	(9,738)	(123,206)
Dividends on preferred stock	(12,115)	(13,748)	(24,480)	(27,495)
Gain on repurchase and retirement of preferred stock	2,454	—	2,454	—
Comprehensive income (loss) attributable to common stockholders	$ 31,478	$ (90,379)	$ (31,764)	$ (150,701)

(in thousands) **Balance Sheet Data:**	June 30, 2023	December 31, 2022
	(unaudited)	
Available-for-sale securities	$ 8,963,203	$ 7,778,734
Mortgage servicing rights	$ 3,273,956	$ 2,984,937
Total assets	$ 14,009,999	$ 13,466,160
Repurchase agreements	$ 9,067,824	$ 8,603,011
Revolving credit facilities	$ 1,455,421	$ 1,118,831
Term notes payable	$ 398,653	$ 398,011
Convertible senior notes	$ 267,791	$ 282,496
Total stockholders’ equity	$ 2,216,009	$ 2,183,525

Results of Operations

The following analysis focuses on financial results during the three and six months ended June 30, 2023 and 2022.

Interest Income

Interest income increased from $57.0 million and $101.8 million for the three and six months ended June 30, 2022, respectively, to $117.8 million and $234.4 million for the same periods in 2023 due to an increase in Agency RMBS portfolio size, lower amortization recognized on Agency RMBS due to lower unamortized premium, higher interest on cash balances as a result of the higher interest rate environment and increased use of reverse repurchase agreements.

Interest Expense

Interest expense increased from $37.1 million and $59.4 million for the three and six months ended June 30, 2022, respectively, to $159.6 million and $302.1 million for the same periods in 2023 due to higher borrowing balances on Agency RMBS and MSR and increases in interest rates.

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Net Interest Income

The following tables present the components of interest income and average net asset yield earned by asset type, the components of interest expense and average cost of funds on borrowings incurred by collateral type, and net interest income and average net interest spread for the three and six months ended June 30, 2023 and 2022:

	Three Months Ended June 30, 2023			Six Months Ended June 30, 2023		
(dollars in thousands)	**Average Balance (1)**	**Interest Income/Expense**	**Net Yield/Cost of Funds**	**Average Balance (1)**	**Interest Income/Expense**	**Net Yield/Cost of Funds**
Interest-earning assets:						
Available-for-sale securities	$ 8,960,056	$ 104,195	4.7 %	$ 8,804,217	$ 201,233	4.6 %
Reverse repurchase agreements	293,309	3,655	5.0 %	555,045	12,217	4.4 %
Other		9,912			20,905	
Total interest income/net asset yield	$ 9,253,365	$ 117,762	5.1 %	$ 9,359,262	$ 234,355	5.0 %
Interest-bearing liabilities:						
Borrowings collateralized by:						
Available-for-sale securities	$ 8,533,628	$ 111,090	5.2 %	$ 8,357,370	$ 203,113	4.9 %
Agency Derivatives (2)	12,295	175	5.7 %	12,379	334	5.4 %
Mortgage servicing rights and advances (3)	2,001,554	43,552	8.7 %	1,940,279	82,447	8.5 %
U.S. Treasuries (4)	4,412	52	4.7 %	288,090	6,629	4.6 %
Unsecured borrowings:						
Convertible senior notes	272,753	4,692	6.9 %	277,741	9,528	6.9 %
Total interest expense/cost of funds	$ 10,824,642	$ 159,561	5.9 %	$ 10,875,859	$ 302,051	5.6 %
Net interest (expense) income/spread		$ (41,799)	(0.8)%		$ (67,696)	(0.6)%

	Three Months Ended June 30, 2022			Six Months Ended June 30, 2022		
(dollars in thousands)	**Average Balance (1)**	**Interest Income/Expense**	**Net Yield/Cost of Funds**	**Average Balance (1)**	**Interest Income/Expense**	**Net Yield/Cost of Funds**
Interest-earning assets						
Available-for-sale securities	$ 7,248,502	$ 55,399	3.1 %	$ 7,275,550	$ 100,046	2.8 %
Reverse repurchase agreements	151,376	267	0.7 %	138,225	278	0.2 %
Other		1,337			1,525	
Total interest income/net asset yield	$ 7,399,878	$ 57,003	3.1 %	$ 7,413,775	$ 101,849	2.7 %
Interest-bearing liabilities						
Borrowings collateralized by:						
Available-for-sale securities	$ 7,012,474	$ 12,955	0.7 %	$ 7,301,518	$ 17,742	0.5 %
Agency Derivatives (2)	27,074	93	1.4 %	30,997	158	1.0 %
Mortgage servicing rights and advances (3)	1,628,474	19,252	4.7 %	1,420,473	31,675	4.5 %
Unsecured borrowings:						
Convertible senior notes	281,608	4,801	6.8 %	292,637	9,843	6.7 %
Total interest expense/cost of funds	$ 8,949,630	$ 37,101	1.7 %	$ 9,045,625	$ 59,418	1.3 %
Net interest income/spread		$ 19,902	1.4 %		$ 42,431	1.4 %

(1) Average asset balance represents average amortized cost on AFS securities and average unpaid principal balance on other assets.
(2) Yields on Agency Derivatives not shown as interest income is included in gain (loss) on other derivative instruments in the condensed consolidated statements of comprehensive income (loss).
(3) Yields on mortgage servicing rights and advances not shown as these assets do not earn interest.
(4) U.S. Treasury securities effectively borrowed under reverse repurchase agreements.

The increase in yields on AFS securities for the three and six months ended June 30, 2023, as compared to the same periods in 2022 was driven by net purchases of higher coupon AFS securities with lower unamortized premiums, offset by a slightly higher CPR experienced by AFS securities. The increase in cost of funds associated with the financing of AFS securities for the three and six months ended June 30, 2023, as compared to the same periods in 2022, was due to rising interest rates.

The increase in yields on reverse repurchase agreements for the three and six months ended June 30, 2023, as compared to the same periods in 2022, was the result of rising interest rates. However, these yields were offset by the cost of financing the associated repurchase agreements collateralized by U.S. Treasury securities during the three and six months ended June 30, 2023. We did not hold any repurchase agreements collateralized by U.S. Treasury securities during the three and six months ended June 30, 2022.

The increase in cost of funds associated with the financing of Agency Derivatives for the three and six months ended June 30, 2023, as compared to the same periods in 2022, was the result of rising interest rates.

The increase in cost of funds associated with the financing of MSR assets and related servicing advance obligations for the three and six months ended June 30, 2023, as compared to the same periods in 2022, was due to rising interest rates and an increase in the use of revolving credit facilities and repurchase agreement financing, which on average carry higher floating rate spreads than term notes. We have one revolving credit facility in place to finance our servicing advance obligations, which are included in other assets on our condensed consolidated balance sheets.

The slight increase in cost of funds associated with our convertible senior notes for the three and six months ended June 30, 2023, as compared to the same periods in 2022, was due to lower amortization of deferred debt issuance costs during the six months ended June 30, 2022 as a result of the maturity of our convertible senior notes due 2022 in January 2022.

The following tables present the components of the yield earned on our AFS securities portfolio as a percentage of our average amortized cost of securities for the three and six months ended June 30, 2023 and 2022:

	Three Months Ended June 30,		Six Months Ended June 30,	
(in thousands)	**2023**	**2022**	**2023**	**2022**
Gross yield/stated coupon	5.0 %	4.3 %	4.9 %	4.3 %
Net (premium amortization) discount accretion	(0.3)%	(1.2)%	(0.3)%	(1.5)%
Net yield	4.7 %	3.1 %	4.6 %	2.8 %

Gain (Loss) On Investment Securities

The following table presents the components of gain (loss) on investment securities for the three and six months ended June 30, 2023 and 2022:

	Three Months Ended June 30,		Six Months Ended June 30,	
(in thousands)	**2023**	**2022**	**2023**	**2022**
Proceeds from sales	$ 215,054	$ 2,326,528	$ 1,575,796	$ 4,339,148
Amortized cost of securities sold	(218,383)	(2,514,613)	(1,611,867)	(4,582,084)
Total realized losses on sales	(3,329)	(188,085)	(36,071)	(242,936)
(Provision for) reversal of provision for credit losses	(23)	(537)	119	(1,651)
Other	5,524	(9,097)	48,922	(5,474)
Gain (loss) on investment securities	$ 2,172	$ (197,719)	$ 12,970	$ (250,061)

In the ordinary course of our business, we make investment decisions and allocate capital in accordance with our views on the changing risk/reward dynamics in the market and in our portfolio. We do not expect to sell assets on a frequent basis, but may sell assets to reallocate capital into new assets that we believe have higher risk-adjusted returns.

We use a discounted cash flow method to estimate and recognize an allowance for credit losses on AFS securities. Subsequent adverse or favorable changes in expected cash flows are recognized immediately in earnings as a provision for or reversal of provision for credit losses (within gain (loss) on investment securities).

The majority of the "other" component of gain (loss) on investment securities is related to changes in unrealized gains (losses) on certain AFS securities for which we have elected the fair value option. Fluctuations in this line item are primarily driven by the reclassification of unrealized gains and losses to realized gains and losses upon sale, as well as changes in fair value assumptions.

Servicing Income

The following table presents the components of servicing income for the three and six months ended June 30, 2023 and 2022:

	Three Months Ended June 30,		Six Months Ended June 30,	
(in thousands)	**2023**	**2022**	**2023**	**2022**
Servicing fee income	$ 144,370	$ 153,620	$ 273,607	$ 288,834
Ancillary and other fee income	1,391	561	1,760	1,031
Float income	29,462	3,345	53,176	4,287
Total	$ 175,223	$ 157,526	$ 328,543	$ 294,152

The increase in servicing income for the three and six months ended June 30, 2023, as compared to the same periods in 2022, was primarily due to higher float income as a result of the higher interest rate environment and lower compensating interest as a result of lower prepayment rates.

Gain (Loss) On Servicing Asset

The following table presents the components of gain (loss) on servicing asset for the three and six months ended June 30, 2023 and 2022:

	Three Months Ended June 30,		Six Months Ended June 30,	
(in thousands)	**2023**	**2022**	**2023**	**2022**
Changes in fair value due to changes in valuation inputs or assumptions used in the valuation model	$ 82,196	$ 199,272	$ 102,617	$ 724,185
Changes in fair value due to realization of cash flows (runoff)	(60,517)	(113,715)	(108,178)	(228,004)
Losses on sales	—	—	(839)	—
Gain (loss) on servicing asset	$ 21,679	$ 85,557	$ (6,400)	$ 496,181

The decrease in gain on servicing asset for the three months ended June 30, 2023, as compared to the same period in 2022, was driven by decreased favorable change in valuation assumptions used in the fair valuation of MSR, offset by lower portfolio runoff. The increase in loss (decrease in gain) on servicing asset for the six months ended June 30, 2023, as compared to the same period in 2022, was driven by decreased favorable change in valuation assumptions used in the fair valuation of MSR and losses on sales of MSR, offset by lower portfolio runoff.

Gain (Loss) On Interest Rate Swap And Swaption Agreements

The following table summarizes the net interest spread and gains and losses associated with our interest rate swap and swaption positions recognized during the three and six months ended June 30, 2023 and 2022:

	Three Months Ended June 30,		Six Months Ended June 30,	
(in thousands)	**2023**	**2022**	**2023**	**2022**
Net interest spread	$ 3,452	$ (4,267)	$ 7,063	$ (5,008)
Early termination, agreement maturation and option expiration gains (losses)	—	246,211	(18,580)	189,947
Change in unrealized gain (loss) on interest rate swap and swaption agreements, at fair value	53,081	(209,210)	(14,104)	(190,246)
Gain (loss) on interest rate swap and swaption agreements	$ 56,533	$ 32,734	$ (25,621)	$ (5,307)

Net interest spread recognized for the accrual and/or settlement of the net interest expense associated with our interest rate swaps results from receiving either a floating interest rate (OIS or SOFR) or a fixed interest rate and paying either a fixed interest rate or a floating interest rate (OIS or SOFR) on positions held to economically hedge/mitigate portfolio interest rate exposure (or duration) risk. We may elect to terminate certain swaps and swaptions to align with our investment portfolio, agreements may mature or options may expire resulting in full settlement of our net interest spread asset/liability and the recognition of realized gains and losses, including early termination penalties. The change in fair value of interest rate swaps and swaptions during the three and six months ended June 30, 2023 and 2022 was a result of changes to floating interest rates (OIS or SOFR), the swap curve and corresponding counterparty borrowing rates. Since swaps and swaptions are used for purposes of hedging our interest rate exposure, their unrealized valuation gains and losses (excluding the reversal of unrealized gains and losses to realized gains and losses upon termination, maturation or option expiration) are generally offset by unrealized losses and gains in our Agency RMBS AFS portfolio, which are recorded either directly to stockholders' equity through other comprehensive loss or to gain (loss) on investment securities, in the case of certain AFS securities for which we have elected the fair value option.

Gain (Loss) On Other Derivative Instruments

The following table provides a summary of the total net gains (losses) recognized on other derivative instruments we hold for purposes of both hedging and non-hedging activities, principally TBAs, futures, options on futures, and inverse interest-only securities during the three and six months ended June 30, 2023 and 2022:

(in thousands)	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
TBAs	$ (77,083)	$ (109,442)	$ (94,247)	$ (308,278)
Futures	126,923	11,312	(13,164)	117,407
Options on futures	—	(158)	—	(2,224)
Inverse interest-only securities	(2,679)	(2,985)	(1,199)	(9,940)
Gain (loss) on other derivative instruments	$ 47,161	$ (101,273)	$ (108,610)	$ (203,035)

For further details regarding our use of derivative instruments and related activity, refer to Note 7 - *Derivative Instruments and Hedging Activities* to the condensed consolidated financial statements, included in this Quarterly Report on Form 10-Q.

Expenses

The following table presents the components of expenses for the three and six months ended June 30, 2023 and 2022:

(dollars in thousands)	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Servicing expenses	$ 25,190	$ 22,991	$ 53,556	$ 47,695
Operating expenses:				
Compensation and benefits:				
Non-cash equity compensation expenses	$ 1,735	$ 3,461	$ 7,787	$ 7,622
All other compensation and benefits	7,133	7,558	15,164	15,590
Total compensation and benefits	$ 8,868	$ 11,019	$ 22,951	$ 23,212
Other operating expenses:				
Nonrecurring expenses	$ 7,134	$ 2,428	$ 12,552	$ 3,117
All other operating expenses	4,752	6,724	9,818	12,660
Total other operating expenses	$ 11,886	$ 9,152	$ 22,370	$ 15,777
Annualized operating expense ratio	3.8 %	3.1 %	4.0 %	2.9 %
Annualized operating expense ratio, excluding non-cash equity compensation and other nonrecurring expenses	2.2 %	2.2 %	2.2 %	2.1 %

We incur servicing expenses generally related to the subservicing of MSR. The increase in servicing expenses during the three and six months ended June 30, 2023, as compared to the same periods in 2022, was driven by higher deboarding expenses as we transition our portfolio to RoundPoint from other subservicers as well as a net increase in our reserve liabilities for standard representations and warranties, early payment default, first payment default, premium recapture and other repurchase obligations.

The increase in total operating expenses during the three and six months ended June 30, 2023, as compared to the same periods in 2022, was driven by higher nonrecurring expenses, offset by lower compensation and benefits and other operating expenses.

Income Taxes

During the three months ended June 30, 2023, our TRSs recognized a provision for income taxes of $19.8 million, which was primarily due to income from MSR servicing activities and net gains recognized on MSR, offset by net losses recognized on derivative instruments and operating expenses. During the six months ended June 30, 2023, our TRSs recognized a provision for income taxes of $15.9 million, which was primarily due to income from MSR servicing activities, offset by net losses recognized on MSR and derivative instruments as well as operating expenses. During the three and six months ended June 30, 2022, our TRSs recognized a provision for income taxes of $25.9 million and $74.7 million, respectively, which was primarily due to income from MSR servicing activities and gains recognized on MSR, offset by net losses recognized on derivative instruments and operating expenses.

Financial Condition

Available-for-Sale Securities, at Fair Value

The majority of our AFS investment securities portfolio is comprised of fixed rate Agency mortgage-backed securities backed by single-family and multi-family mortgage loans. We also hold $87.8 million in tranches of mortgage-backed and asset-backed P&I and interest-only non-Agency securities. All of our P&I Agency RMBS AFS are Fannie Mae or Freddie Mac mortgage pass-through certificates or collateralized mortgage obligations, or Ginnie Mae mortgage pass-through certificates, which are backed by the guarantee of the U.S. government. The majority of these securities consist of whole pools in which we own all of the investment interests in the securities.

The tables below summarizes certain characteristics of our Agency RMBS AFS at June 30, 2023:

	June 30, 2023								
(dollars in thousands, except purchase price)	Principal/ Current Face	Net (Discount) Premium	Amortized Cost	Allowance for Credit Losses	Unrealized Gain	Unrealized Loss	Carrying Value	Weighted Average Coupon Rate	Weighted Average Purchase Price
P&I securities	$ 9,048,410	$ 103,234	$ 9,151,644	$ —	$ 3,377	$ (309,519)	$ 8,845,502	4.84 %	$ 101.41
Interest-only securities	781,081	39,157	39,157	(5,087)	992	(5,169)	29,893	2.06 %	$ 20.24
Total	$ 9,829,491	$ 142,391	$ 9,190,801	$ (5,087)	$ 4,369	$ (314,688)	$ 8,875,395		

Mortgage Servicing Rights, at Fair Value

One of our wholly owned subsidiaries has approvals from Fannie Mae and Freddie Mac to own and manage MSR, which represent the right to control the servicing of mortgage loans. We do not directly service mortgage loans, and instead contract with appropriately licensed subservicers to handle substantially all servicing functions in the name of the subservicer for the loans underlying our MSR. As of June 30, 2023, our MSR had a fair market value of $3.3 billion.

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As of June 30, 2023, our MSR portfolio included MSR on 864,979 loans with an unpaid principal balance of $222.6 billion. The following tables summarize certain characteristics of the loans underlying our MSR by gross weighted average coupon rate types and ranges at June 30, 2023:

	June 30, 2023									
(dollars in thousands)	Number of Loans	Unpaid Principal Balance	Weighted Average Gross Coupon Rate	Weighted Average Current Loan Size	Weighted Average Loan Age (months)	Weighted Average Original FICO	Weighted Average Original LTV	60+ Day Delinquencies	3-Month CPR	Net Servicing Fee (bps)
30-Year Fixed:										
≤ 3.25%	305,114	$ 97,789,781	2.1 %	$ 378	29	768	71.0 %	0.3 %	4.4 %	25.8
> 3.25 - 3.75%	149,620	39,339,573	3.4 %	333	42	753	74.1 %	0.7 %	5.7 %	26.2
> 3.75 - 4.25%	109,245	23,048,859	3.9 %	277	64	751	75.8 %	1.0 %	6.9 %	27.2
> 4.25 - 4.75%	61,741	11,481,300	4.4 %	264	63	739	77.3 %	1.8 %	7.1 %	26.3
> 4.75 - 5.25%	42,450	9,950,928	4.9 %	356	33	745	78.7 %	1.4 %	5.6 %	26.8
> 5.25%	59,734	16,800,563	5.9 %	383	14	745	80.2 %	0.9 %	6.4 %	29.5
	727,904	198,411,004	3.5 %	350	36	758	73.7 %	0.7 %	5.3 %	26.4
15-Year Fixed:										
≤ 2.25%	23,033	6,240,894	2.0 %	319	26	777	59.1 %	0.1 %	4.3 %	25.2
> 2.25 - 2.75%	39,057	8,495,418	2.4 %	267	30	772	58.8 %	0.2 %	5.7 %	25.9
> 2.75 - 3.25%	35,543	4,999,153	2.9 %	196	57	766	61.4 %	0.3 %	7.6 %	26.2
> 3.25 - 3.75%	20,556	2,121,479	3.4 %	154	70	756	64.0 %	0.4 %	9.3 %	26.9
> 3.75 - 4.25%	9,628	841,083	3.9 %	143	66	742	65.2 %	0.8 %	9.4 %	28.5
> 4.25%	6,574	793,262	4.9 %	224	29	741	65.4 %	0.7 %	11.5 %	32.0
	134,391	23,491,289	2.6 %	250	39	769	60.4 %	0.2 %	6.4 %	26.2
Total ARMs	2,684	719,884	4.1 %	355	52	761	70.2 %	1.0 %	16.8 %	25.4
Total	864,979	$ 222,622,177	3.4 %	$ 340	37	759	72.3 %	0.6 %	5.5 %	26.4

Financing

Our borrowings consist primarily of repurchase agreements, revolving credit facilities, term notes payable and convertible senior notes. Repurchase agreements, revolving credit facilities and term notes payable are collateralized by our pledge of AFS securities, derivative instruments, MSR, servicing advances and certain cash balances. Substantially all of our Agency securities are currently pledged as collateral, and the majority of our non-Agency securities have been pledged as collateral for repurchase agreements. Additionally, a substantial portion of our MSR is currently pledged as collateral for repurchase agreements, revolving credit facilities and term notes payable, and a portion of our servicing advances have been pledged as collateral for revolving credit facilities. In connection with our securitization of MSR and issuance of term notes payable, a variable funding note, or VFN, was issued to one of our subsidiaries. We have one repurchase facility that is secured by the VFN, which is collateralized by our MSR. Finally, our convertible senior notes due 2026 are unsecured and pay interest semiannually at a rate of 6.25% per annum.

Our term notes previously incorporated LIBOR as the referenced rate, which was replaced with Term SOFR, plus a spread adjustment, during the three months ended June 30, 2023. See Item 2, "*Management's Discussion and Analysis of Financial Condition and Results of Operations - Market Conditions and Outlook - LIBOR transition*" in this Quarterly Report on Form 10-Q for further discussion.

At June 30, 2023, borrowings under repurchase agreements, revolving credit facilities, term notes payable and convertible senior notes had the following characteristics:

(dollars in thousands)	June 30, 2023		
Borrowing Type	Amount Outstanding	Weighted Average Borrowing Rate	Weighted Average Years to Maturity
Repurchase agreements	$ 9,067,824	5.33 %	0.2
Revolving credit facilities	1,455,421	8.46 %	1.6
Term notes payable	398,653	8.00 %	1.0
Convertible senior notes [(1)]	267,791	6.25 %	2.5
Total	$ 11,189,689	5.86 %	0.5

(dollars in thousands)	June 30, 2023		
Collateral Type	Amount Outstanding	Weighted Average Borrowing Rate	Weighted Average Haircut on Collateral Value
Agency RMBS	$ 8,747,908	5.23 %	3.8 %
Non-Agency securities	47,603	6.61 %	40.0 %
Agency Derivatives	12,313	5.72 %	18.7 %
Mortgage servicing rights	2,071,024	8.40 %	31.6 %
Mortgage servicing advances	43,050	8.46 %	12.6 %
Other [(1)]	267,791	6.25 %	N/A
Total	$ 11,189,689	5.86 %	9.0 %

(1) Includes unsecured convertible senior notes due 2026 paying interest semiannually at a rate of 6.25% per annum on the aggregate principal amount of $271.9 million.
(2) U.S. Treasury securities effectively borrowed under reverse repurchase agreements.

As of June 30, 2023, the debt-to-equity ratio funding our AFS securities, MSR, servicing advances and Agency Derivatives, which includes unsecured borrowings under convertible senior notes, was 5.0:1.0. As previously discussed, our Agency RMBS, given their liquidity and high credit quality, are eligible for higher levels of leverage, while MSR, with less liquidity and/or more exposure to prepayment risk, utilize lower levels of leverage. Generally, our debt-to-equity ratio is directly correlated to the composition of our portfolio; typically, the higher the percentage of Agency RMBS we hold, the higher our debt-to-equity ratio will be. However, in addition to portfolio mix, our debt-to-equity ratio is a function of many other factors, including the liquidity of our portfolio, the availability and price of our financing, the diversification of our counterparties and their available capacity to finance our assets, and anticipated regulatory developments. We may alter the percentage allocation of our portfolio among our target assets depending on the relative value of the assets that are available to purchase from time to time, including at times when we are deploying proceeds from offerings we conduct. We believe the current degree of leverage within our portfolio helps ensure that we have access to unused borrowing capacity, thus supporting our liquidity and the strength of our balance sheet.

The following table provides a summary of our borrowings under repurchase agreements (excluding those collateralized by U.S. Treasuries), revolving credit facilities, term notes payable and convertible senior notes and our debt-to-equity ratios for the three months ended June 30, 2023, and the four immediately preceding quarters:

(dollars in thousands)

For the Three Months Ended	Quarterly Average	End of Period Balance	Maximum Balance of Any Month-End	End of Period Total Borrowings to Equity Ratio	End of Period Net Long (Short) TBA Cost Basis	End of Period Net Payable (Receivable) for Unsettled RMBS	End of Period Economic Debt-to-Equity Ratio [(1)]
June 30, 2023	$ 10,820,230	$ 11,189,689	$ 11,189,689	5.0:1.0	$ 2,905,852	$ 54,739	6.4:1.0
March 31, 2023	$ 10,354,624	$ 10,857,943	$ 11,162,257	4.8:1.0	$ 3,644,540	$ —	6.5:1.0
December 31, 2022	$ 9,878,254	$ 9,514,054	$ 10,672,731	4.4:1.0	$ 3,923,298	$ 342,964	6.3:1.0
September 30, 2022	$ 10,973,416	$ 11,844,972	$ 11,844,972	5.5:1.0	$ 4,153,582	$ 34,576	7.5:1.0
June 30, 2022	$ 8,949,630	$ 9,463,102	$ 9,463,102	3.8:1.0	$ 6,409,396	$ 1,240,666	6.9:1.0

(1) Defined as total borrowings under repurchase agreements (excluding those collateralized by U.S. Treasuries), revolving credit facilities, term notes payable and convertible senior notes, plus implied debt on net TBA cost basis and net payable (receivable) for unsettled RMBS, divided by total equity. Effective as of December 31, 2022, net payable (receivable) on unsettled RMBS is now included in the calculation for economic debt-to-equity. Prior period data have been updated to conform to the current period calculation.

Equity

The following table provides details of our changes in stockholders' equity from March 31, 2023 to June 30, 2023.

(in millions, except per share amounts)	Book Value	Common Shares Outstanding	Common Book Value Per Share
Common stockholders' equity at March 31, 2023	$ 1,593.4	96.7	$ 16.48
Net income	197.4		
Other comprehensive loss	(156.3)		
Comprehensive income	41.1		
Dividends on preferred stock	(12.1)		
Gain on repurchase and retirement of preferred stock	2.5		
Comprehensive income attributable to common stockholders	31.5		
Dividend declaration	(43.6)		
Other	1.7	0.1	
Balance before capital transactions	1,583.0	96.8	
Repurchase of preferred stock	0.4		
Repurchase of common stock	(7.0)	(0.6)	
Issuance of common stock, net of offering costs	0.1	—	
Common stockholders' equity at June 30, 2023	$ 1,576.5	96.2	$ 16.39
Total preferred stock liquidation preference	639.5		
Total stockholders' equity at June 30, 2023	$ 2,216.0		

Liquidity and Capital Resources

Our liquidity and capital resources are managed and forecasted on a daily basis. We believe this ensures that we have sufficient liquidity to absorb market events that could negatively impact collateral valuations and result in margin calls. We also believe that it gives us the flexibility to manage our portfolio to take advantage of market opportunities.

Our principal sources of cash consist of borrowings under repurchase agreements, revolving credit facilities, term notes payable, payments of principal and interest we receive on our target assets, cash generated from our operating results, and proceeds from capital market transactions. We typically use cash to repay principal and interest on our borrowings, to purchase our target assets, to make dividend payments on our capital stock, and to fund our operations. To the extent that we raise additional equity capital through capital market transactions, we anticipate using cash proceeds from such transactions to purchase our target assets and for other general corporate purposes. Such general corporate purposes may include the refinancing or repayment of debt, the repurchase or redemption of common and preferred equity securities, and other capital expenditures.

As of June 30, 2023, we held $699.1 million in cash and cash equivalents available to support our operations; $12.3 billion of AFS securities, MSR, and derivative assets held at fair value; and $11.2 billion of outstanding debt in the form of repurchase agreements, borrowings under revolving credit facilities, term notes payable and convertible senior notes. During the three and six months ended June 30, 2023, the debt-to-equity ratio funding our Agency and non-Agency investment securities, MSR and servicing advances, which includes unsecured borrowings under convertible senior notes, increased from 4.8:1.0 to 5.0:1.0 and increased from 4.4:1.0 to 5.0:1.0, respectively. The increase was predominantly driven by an increase in financing on Agency RMBS purchases and MSR. During the three and six months ended June 30, 2023, our economic debt-to-equity ratio funding our Agency and non-Agency investment securities, MSR and servicing advances, which includes unsecured borrowings under convertible senior notes, implied debt on net TBA cost basis and net payable (receivable) for unsettled RMBS, decreased from 6.5:1.0 to 6.4:1.0 and increased from 6.3:1.0 to 6.4:1.0, respectively.

As of June 30, 2023, we held approximately $0.8 million of unpledged Agency securities and $7.6 million of unpledged non-Agency securities. As a result, we had an overall estimated unused borrowing capacity on unpledged securities of approximately $5.3 million. As of June 30, 2023, we held approximately $61.2 million of unpledged MSR and $32.5 million of unpledged servicing advances. Overall, on June 30, 2023, we had $85.4 million unused committed and $342.3 million unused uncommitted borrowing capacity on MSR financing facilities, and $157.0 million in unused committed borrowing capacity on servicing advance financing facilities. Generally, unused borrowing capacity may be the result of our election not to utilize certain financing, as well as delays in the timing in which funding is provided, insufficient collateral or the inability to meet lenders' eligibility requirements for specific types of asset classes. On a daily basis, we monitor and forecast our available, or excess, liquidity. Additionally, we frequently perform shock analyses against various market events to monitor the adequacy of our excess liquidity.

During the six months ended June 30, 2023, we did not experience any material issues accessing our funding sources. We expect ongoing sources of financing to be primarily repurchase agreements, revolving credit facilities, term notes payable, convertible notes and similar financing arrangements. We plan to finance our assets with a moderate amount of leverage, the level of which may vary based upon the particular characteristics of our portfolio and market conditions.

As of June 30, 2023, we had master repurchase agreements in place with 38 counterparties (lenders), the majority of which are U.S. domiciled financial institutions, and we continue to evaluate additional counterparties to manage and optimize counterparty risk. Under our repurchase agreements, we are required to pledge additional assets as collateral to our lenders when the estimated fair value of the existing pledged collateral under such agreements declines and such lenders, through a margin call, demand additional collateral. Lenders generally make margin calls because of a perceived decline in the value of our assets collateralizing the repurchase agreements. This may occur following the monthly principal reduction of assets due to scheduled amortization and prepayments on the underlying mortgages, or may be caused by changes in market interest rates, a perceived decline in the market value of the investments and other market factors. To cover a margin call, we may pledge additional assets or cash. At maturity, any cash on deposit as collateral is generally applied against the repurchase agreement balance, thereby reducing the amount borrowed. Should the value of our assets suddenly decrease, significant margin calls on our repurchase agreements could result, causing an adverse change in our liquidity position.

In addition to our master repurchase agreements that fund our Agency and non-Agency securities, we have one repurchase facility and three revolving credit facilities that provide short- and long-term financing for our MSR portfolio. We also have one revolving credit facility that provides long-term financing for our servicing advances. A summary of our MSR and servicing advance facilities is provided in the table below:

(dollars in thousands)

	June 30, 2023				
Expiration Date [(1)]	**Amount Outstanding**	**Unused Committed Capacity [(2)]**	**Unused Uncommitted Capacity**	**Total Capacity**	**Eligible Collateral**
March 31, 2025	$ 747,731	$ —	$ 152,269	$ 900,000	Mortgage servicing rights
March 17, 2025	$ 335,640	$ 14,360	$ 150,000	$ 500,000	Mortgage servicing rights [(3)]
June 29, 2024	$ 329,000	$ 71,000	$ —	$ 400,000	Mortgage servicing rights
December 29, 2023	$ 260,000	$ —	$ 40,000	$ 300,000	Mortgage servicing rights [(4)]
September 28, 2024	$ 43,050	$ 156,950	$ —	$ 200,000	Mortgage servicing advances

(1) The facilities are set to mature on the stated expiration date, unless extended pursuant to their terms.
(2) Represents unused capacity amounts to which commitment fees are charged.
(3) The revolving period of this facility ceases on March 17, 2024, at which time the facility starts a 12-month amortization period.
(4) This repurchase facility is secured by a VFN issued in connection with our securitization of MSR, which is collateralized by our MSR.

We are subject to a variety of financial covenants under our lending agreements. The following represent the most restrictive financial covenants across our lending agreements as of June 30, 2023:

- Total indebtedness to tangible net worth must be less than 8.0:1.0. As of June 30, 2023, our total indebtedness to tangible net worth, as defined, was 5.2:1.0.
- Cash liquidity must be greater than $200.0 million. As of June 30, 2023, our liquidity, as defined, was $699.1 million.
- Net worth must be greater than the higher of $1.5 billion or 50% of the highest net worth during the 24 calendar months prior. As of June 30, 2023, 50% of the highest net worth during the 24 calendar months prior, as defined, was $1.4 billion and our net worth, as defined, was $2.2 billion.

We are also subject to additional financial covenants in connection with various other agreements we enter into in the normal course of our business. We intend to continue to operate in a manner which complies with all of our financial covenants.

The following table summarizes assets at carrying values that were pledged or restricted as collateral for the future payment obligations of repurchase agreements, revolving credit facilities, term notes payable and derivative instruments at June 30, 2023 and December 31, 2022:

(in thousands)	**June 30, 2023**	**December 31, 2022**
Available-for-sale securities, at fair value	$ 8,900,438	$ 7,426,953
Mortgage servicing rights, at fair value	3,212,759	2,958,057
Restricted cash	278,142	324,854
Due from counterparties	248,607	22,055
Derivative assets, at fair value	12,089	14,738
Other assets	49,298	67,819
U.S. Treasuries [(1)]	—	877,632
Total	$ 12,701,333	$ 11,692,108

(1) U.S. Treasury securities effectively borrowed under reverse repurchase agreements.

Although we generally intend to hold our target assets as long-term investments, we may sell certain of our assets in order to manage our interest rate risk and liquidity needs, to meet other operating objectives and to adapt to market conditions. Our Agency RMBS are generally actively traded and thus, in most circumstances, readily liquid. However, certain of our assets, including MSR, are subject to longer trade timelines, and, as a result, market conditions could significantly and adversely affect the liquidity of our assets. Any illiquidity of our assets may make it difficult for us to sell such assets if the need or desire arises. Our ability to quickly sell certain assets, such as MSR, may be limited by delays encountered while obtaining certain Agency approvals required for such dispositions and may be further limited by delays due to the time period needed for negotiating transaction documents, conducting diligence, and complying with Agency requirements regarding the transfer of such assets before settlement may occur. Consequently, even if we identify a buyer for our MSR, there is no assurance that we would be able to quickly sell such assets if the need or desire arises.

In addition, if we are required to liquidate all or a portion of our portfolio quickly, we may realize significantly less than the value at which we previously recorded our assets. Assets that are illiquid are more difficult to finance, and to the extent that we use leverage to finance assets that become illiquid, we may lose that leverage or have it reduced. Assets tend to become less liquid during times of financial stress, which is often the time that liquidity is most needed. As a result, our ability to sell assets or vary our portfolio in response to changes in economic and other conditions may be limited by liquidity constraints, which could adversely affect our results of operations and financial condition.

We cannot predict the timing and impact of future sales of our assets, if any. Because many of our assets are financed with repurchase agreements, revolving credit facilities and term notes payable, a significant portion of the proceeds from sales of our assets (if any), prepayments and scheduled amortization are used to repay balances under these financing sources.

The following table provides the maturities of our repurchase agreements, revolving credit facilities, term notes payable and convertible senior notes as of June 30, 2023 and December 31, 2022:

(in thousands)	**June 30, 2023**	**December 31, 2022**
Within 30 days	$ 3,160,003	$ 2,691,195
30 to 59 days	1,833,300	2,160,737
60 to 89 days	1,433,203	2,536,636
90 to 119 days	1,339,313	905,443
120 to 364 days	2,027,258	509,000
One to three years	1,396,612	1,316,842
Three to five years	—	282,496
Total	$ 11,189,689	$ 10,402,349

For the three months ended June 30, 2023, our restricted and unrestricted cash balance increased approximately $196.1 million to $1.0 billion at June 30, 2023. The cash movements can be summarized by the following:

- *Cash flows from operating activities.* For the three months ended June 30, 2023, operating activities increased our cash balances by approximately $111.3 million, primarily driven by our financial results for the quarter.
- *Cash flows from investing activities*. For the three months ended June 30, 2023, investing activities increased our cash balances by approximately $39.9 million, primarily driven by net proceeds from reverse repurchase agreements and sales of derivative instruments, offset by net purchases of AFS securities and MSR.
- *Cash flows from financing activities.* For the three months ended June 30, 2023, financing activities increased our cash balance by approximately $44.9 million, primarily driven by an increase in revolving credit facility financing, offset by the payment of dividends as well as repurchases of convertible senior notes and shares of both preferred and common stock.

Inflation

Our assets and liabilities are financial in nature. As a result, changes in interest rates and other factors impact our performance far more than does inflation, although inflation rates can often have a meaningful influence over the direction of interest rates. Our financial statements are prepared in accordance with U.S. GAAP and dividends are based upon net ordinary income and capital gains as calculated for tax purposes; in each case, our results of operations and reported assets, liabilities and equity are measured with reference to historical cost or fair value without considering inflation.

Item 3. Quantitative and Qualitative Disclosures about Market Risk

We seek to manage our risks related to the credit quality of our assets, interest rates, liquidity, prepayment speeds and market value while providing an opportunity to stockholders to realize attractive risk-adjusted total return through ownership of our capital stock. Although we do not seek to avoid risk completely, we believe that risk can be quantified from historical experience, and we seek to manage our risk levels in order to earn sufficient compensation to justify the risks we undertake and to maintain capital levels consistent with taking such risks.

To manage the risks to our portfolio, we employ portfolio-wide and asset-specific risk measurement and management processes in our daily operations. Risk management tools include software and services licensed or purchased from third parties as well as proprietary and third-party analytical tools and models. There can be no guarantee that these tools and methods will protect us from market risks.

Interest Rate Risk

Interest rates are highly sensitive to many factors, including fiscal and monetary policies and domestic and international economic and political considerations, as well as other factors beyond our control. We are subject to interest rate risk in connection with our assets and related financing obligations.

LIBOR and other indices which had been deemed “benchmarks” for various commercial and financial contracts have been the subject of recent national, international, and other regulatory guidance and proposals for reform, and LIBOR was phased out on June 30, 2023. Our material contracts that are or were indexed to USD-LIBOR have been amended to transition to an alternative benchmark, where necessary. Any other unmodified agreements that incorporate LIBOR as the referenced rate either (i) already had provisions in place that provide for an alternative to LIBOR upon its phase-out, (ii) matured or (iii) were terminated prior to June 30, 2023. See Item 2, “*Management's Discussion and Analysis of Financial Condition and Results of Operations - Market Conditions and Outlook - LIBOR transition*” for further discussion.

Subject to maintaining our qualification as a REIT, we engage in a variety of interest rate risk management techniques that seek to mitigate the influence of interest rate changes on the values of our assets. We may enter into a variety of derivative and non-derivative instruments to economically hedge interest rate risk or “duration mismatch (or gap)” by adjusting the duration of our floating-rate borrowings into fixed-rate borrowings to more closely match the duration of our assets. This particularly applies to borrowing agreements with maturities or interest rate resets of less than six months. Typically, the interest receivable terms (*i.e.*, OIS or SOFR) of certain derivatives match the terms of the underlying debt, resulting in an effective conversion of the rate of the related borrowing agreement from floating to fixed. The objective is to manage the cash flows associated with current and anticipated interest payments on borrowings, as well as the ability to roll or refinance borrowings at the desired amount by adjusting the duration. To help manage the adverse impact of interest rate changes on the value of our portfolio as well as our cash flows, we may, at times, enter into various forward contracts, including short securities, TBAs, options, futures, swaps, caps, credit default swaps and total return swaps. In executing on our current interest rate risk management strategy, we have entered into TBAs, interest rate swap and swaption agreements, futures and options on futures. In addition, because MSR are negative duration assets, they may provide a hedge to interest rate exposure on our Agency RMBS portfolio. In hedging interest rate risk, we seek to mitigate the impact of changing interest rates on the value of our investments, improve risk-adjusted returns and, where possible, obtain a favorable spread between the yield on our assets and the cost of our financing. Our hedging methods are based on many factors, including, but not limited to, our estimates with regard to future interest rates.

REIT income arising from “clearly identified” hedging transactions that are entered into to manage the risk of interest rate or price changes with respect to borrowings, including gain from the disposition of such hedging transactions, to the extent the hedging transactions hedge indebtedness incurred, or to be incurred, by the REIT to acquire or carry real estate assets, will not be treated as gross income for purposes of either the 75% or the 95% gross income tests. In general, for a hedging transaction to be “clearly identified,” (i) it must be identified as a hedging transaction before the end of the day on which it is acquired, originated, or entered into, and (ii) the items of risks being hedged must be identified “substantially contemporaneously” with entering into the hedging transaction (generally not more than 35 days after entering into the hedging transaction). We intend to structure any hedging transactions in a manner that does not jeopardize our qualification as a REIT, although this determination depends on an analysis of the facts and circumstances concerning each hedging transaction. We also implement part of our hedging strategy through our TRSs, which are subject to U.S. federal, state and, if applicable, local income tax.

We treat our TBAs as qualifying assets for purposes of the 75% asset test, to the extent set forth in an opinion from Sidley Austin LLP substantially to the effect that, for purposes of the 75% asset test, our ownership of a TBA should be treated as ownership of the underlying Agency RMBS. We also treat income and gains from our TBAs as qualifying income for purposes of the 75% gross income test, to the extent set forth in an opinion from Sidley Austin LLP substantially to the effect that, for purposes of the 75% gross income test, any gain recognized by us in connection with the settlement of our TBAs should be treated as gain from the sale or disposition of the underlying Agency RMBS.

Interest Rate Effect on Net Interest Income

Our operating results depend in large part on differences between the income earned on our assets and our cost of borrowing and hedging activities. The costs associated with our borrowings are generally based on prevailing market interest rates. During a period of rising interest rates, our borrowing costs generally will increase while the coupon interest earned on our existing portfolio of leveraged fixed-rate Agency RMBS will remain static. Both of these factors could result in a decline in our net interest spread and net interest margin. The inverse result may occur during a period of falling interest rates. The severity of any such decline or increase in our net interest spread and net interest margin would depend on our asset/liability composition at the time, as well as the magnitude and duration of the interest rate increase or decrease.

Our hedging techniques are partly based on assumed levels of prepayments of our target assets. If prepayments are slower or faster than assumed, the life of the investment will be longer or shorter, which could reduce the effectiveness of any hedging strategies we may use and may cause losses on such transactions. Hedging strategies involving the use of derivative securities are highly complex and may produce volatile returns.

The following analyses of risks are based on our experience, estimates, models and assumptions. The analysis is based on models which utilize estimates of fair value and interest rate sensitivity. Actual economic conditions or implementation of decisions may produce results that differ significantly from the estimates and assumptions used in our models.

We perform interest rate sensitivity analyses on various measures of our financial results and condition by examining how our assets, financing, and hedges will perform in various interest rate “shock” scenarios. Two of these measures are presented below in more detail. The first measure is change in annualized net interest income over the next 12 months, including interest spread from our interest rate swaps and float income from custodial accounts associated with our MSR. The second measure is change in value of financial position, including the value of our derivative assets and liabilities. All changes in value are measured as the change from the June 30, 2023 financial position. All projected changes in annualized net interest income are measured as the change from the projected annualized net interest income based off current performance returns.

Computation of the cash flows for the rate-sensitive assets underpinning change in annualized net interest income are based on assumptions related to, among other things, prepayment speeds, yield on future acquisitions, slope of the yield curve, and size of the portfolio (for example, the assumption for prepayment speeds for Agency RMBS, and MSR is that they do not change in response to changes in interest rates). Assumptions for the interest rate sensitive liabilities relate to, among other things, collateral requirements as a percentage of borrowings and amount/term of borrowing. These assumptions may not hold in practice; realized net interest income results may therefore be significantly different from the net interest income produced in scenario analyses. We also note that the uncertainty associated with the estimate of a change in net interest income is directly related to the size of interest rate move considered.

Computation of results for portfolio value involves a two-step process. The first is the use of models to project how the value of interest rate sensitive instruments will change in the scenarios considered. The second, and equally important, step is the improvement of the model projections based on application of our experience in assessing how current market and macroeconomic conditions will affect the prices of various interest rate sensitive instruments. Judgment is best applied to localized (less than 25 basis points, or bps) interest rate moves. The more an instantaneous interest rate move exceeds 25 bps, the greater the likelihood that accompanying market events are significant enough to warrant reconsideration of interest rate sensitivities. As with net interest income, the uncertainty associated with the estimate of change in portfolio value is therefore directly related to the size of interest rate move considered.

The following interest rate sensitivity table displays the potential impact of instantaneous, parallel changes in interest rates of +/- 25 and +/- 50 bps on annualized net interest income and portfolio value, based on our interest sensitive financial instruments at June 30, 2023. The preceding discussion shows that the results for the 25 bps move scenarios are the best representation of our interest rate exposure, followed by those for the 50 bps move scenarios. This hierarchy reflects our localized approach to managing interest rate risk: monitoring rates and rebalancing our hedges on a day to day basis, where rate moves only rarely exceed 25 bps in either direction.

	Changes in Interest Rates			
(dollars in thousands)	**-50 bps**	**-25 bps**	**+25 bps**	**+50 bps**
Change in annualized net interest income [(1)]:	$ 11,602	$ 5,790	$ (5,808)	$ (11,603)
% change in net interest income [(1)]	*7.4 %*	*3.7 %*	*(3.7)%*	*(7.4)%*
Change in value of financial position:				
Available-for-sale securities	$ 192,500	$ 98,911	$ (103,996)	$ (212,415)
As a % of common equity	*12.2 %*	*6.3 %*	*(6.6)%*	*(13.5)%*
Mortgage servicing rights [(2)]	$ (91,100)	$ (39,796)	$ 32,605	$ 54,667
As a % of common equity [(2)]	*(5.8)%*	*(2.6)%*	*2.1 %*	*3.5 %*
Derivatives, net	$ (129,201)	$ (62,546)	$ 59,010	$ 113,884
As a % of common equity	*(8.2)%*	*(4.0)%*	*3.7 %*	*7.2 %*
Reverse repurchase agreements	$ 60	$ 30	$ (30)	$ (60)
As a % of common equity	*— %*	*— %*	*— %*	*— %*
Repurchase agreements	$ (5,597)	$ (2,798)	$ 2,799	$ 5,597
As a % of common equity	*(0.3)%*	*(0.2)%*	*0.2 %*	*0.4 %*
Revolving credit facilities	$ (500)	$ (250)	$ 249	$ 496
As a % of common equity	*— %*	*— %*	*— %*	*— %*
Term notes payable	$ (138)	$ (69)	$ 69	$ 138
As a % of common equity	*— %*	*— %*	*— %*	*— %*
Convertible senior notes	$ (1,348)	$ (683)	$ 665	$ 1,312
As a % of common equity	*(0.1)%*	*— %*	*— %*	*0.1 %*
Total Net Assets	$ (35,324)	$ (7,201)	$ (8,629)	$ (36,381)
As a % of total assets	*(0.3)%*	*(0.1)%*	*(0.1)%*	*(0.3)%*
As a % of common equity	*(2.2)%*	*(0.5)%*	*(0.6)%*	*(2.3)%*

(1) Amounts include the effect of interest spread from our interest rate swaps and float income from custodial accounts associated with our MSR, but do not reflect any potential changes to dollar roll income associated with our TBA positions or U.S. Treasury futures income, which are accounted for as derivative instruments in accordance with U.S. GAAP.
(2) Includes the effect of unsettled MSR.

Certain assumptions have been made in connection with the calculation of the information set forth in the foregoing interest rate sensitivity table and, as such, there can be no assurance that assumed events will occur or that other events will not occur that would affect the outcomes. The base interest rate scenario assumes interest rates at June 30, 2023. As discussed, the analysis utilizes assumptions and estimates based on our experience and judgment. Furthermore, future purchases and sales of assets could materially change our interest rate risk profile.

The information set forth in the interest rate sensitivity table above and all related disclosures constitutes forward-looking statements within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act. While this table reflects the estimated impact of interest rate changes on the static portfolio, we actively manage our portfolio and continuously make adjustments to the size and composition of our asset and hedge portfolio. Actual results could differ significantly from those estimated in the foregoing interest rate sensitivity table.

Prepayment Risk

Prepayment risk is the risk that the principal amount of a mortgage loan will be repaid at a different rate than anticipated. As we receive prepayments of principal on our Agency RMBS, premiums paid on such assets will be amortized against interest income. In general, an increase in prepayment rates will accelerate the amortization of purchase premiums, thereby reducing the interest income earned on the assets.

We believe that we will be able to reinvest proceeds from scheduled principal payments and prepayments at acceptable yields; however, no assurances can be given that, should significant prepayments occur, market conditions would be such that acceptable investments could be identified and the proceeds timely reinvested.

MSR are also subject to prepayment risk in that, generally, an increase in prepayment rates on the mortgage loans underlying the MSR would result in a decline in value of the MSR as the prepayment acts to cut short the anticipated life of the servicing income stream.

Market Risk

Market Value Risk. Our AFS securities are reflected at their estimated fair value, with the difference between amortized cost net of allowance for credit losses and estimated fair value for all AFS securities except certain AFS securities for which we have elected the fair value option reflected in accumulated other comprehensive loss. The estimated fair value of these securities fluctuates primarily due to changes in interest rates, market valuation of credit risks, and other factors. Generally, in a rising interest rate environment, we would expect the fair value of these securities to decrease; conversely, in a decreasing interest rate environment, we would expect the fair value of these securities to increase. As market volatility increases or liquidity decreases, the fair value of our assets may be adversely impacted.

Our MSR are reflected at their estimated fair value. The estimated fair value fluctuates primarily due to changes in interest rates and other factors. Generally, in a rising interest rate environment, we would expect prepayments to decrease and the fair value of our MSR to increase. Conversely, in a decreasing interest rate environment, we would expect prepayments to increase and the fair value of our MSR to decrease.

Real Estate Risk. Residential property values are subject to volatility and may be affected adversely by a number of factors, including national, regional and local economic conditions; local real estate conditions (such as the supply of housing); changes or continued weakness in specific industry segments; construction quality, age and design; demographic factors; retroactive changes to building or similar codes; and impacts of climate change, natural disasters and other catastrophes. Decreases in property values reduce the value of the collateral for residential mortgage loans and the potential proceeds available to borrowers to repay the loans, which may impact the value of our Agency RMBS due to changes in voluntary and involuntary prepayment speeds, and/or may increase costs to service the residential mortgage loans underlying our MSR.

Liquidity Risk

Our liquidity risk is principally associated with our financing of long-maturity assets with shorter-term borrowings in the form of repurchase agreements and borrowings under revolving credit facilities. Although the interest rate adjustments of these assets and liabilities fall within the guidelines established by our operating policies, maturities are not required to be, nor are they, matched.

Should the value of our assets pledged as collateral suddenly decrease, lender margin calls could increase, causing an adverse change in our liquidity position. Moreover, the portfolio construction of MSR, which generally have negative duration, combined with levered RMBS, which generally have positive duration, may in certain market scenarios lead to variation margin calls, which could negatively impact our excess cash position. Additionally, if one or more of our repurchase agreement or revolving credit facility counterparties chose not to provide ongoing funding, our ability to finance would decline or exist at possibly less favorable terms. As such, we cannot provide assurance that we will always be able to roll over our repurchase agreements and revolving credit facilities. See Item 2, "*Management's Discussion and Analysis of Financial Condition and Results of Operations - Liquidity and Capital Resources*" in this Quarterly Report on Form 10-Q for further information about our liquidity and capital resource management.

Credit Risk

We believe that our investment strategy will generally keep our risk of credit losses low to moderate. However, we retain the risk of potential credit losses on all of the loans underlying our non-Agency securities.

Item 4. Controls and Procedures

A review and evaluation was performed by our management, including our Chief Executive Officer, or CEO, and Chief Financial Officer, or CFO, of the effectiveness of our disclosure controls and procedures (as such term is defined in Rule 13a-15(e) and 15d-15(e) under the Exchange Act) as of the end of the period covered by this Quarterly Report on Form 10-Q. Based on that review and evaluation, the CEO and CFO have concluded that our current disclosure controls and procedures, as designed and implemented, were effective as of June 30, 2023. Although our CEO and CFO have determined our disclosure controls and procedures were effective at the end of the period covered by this Quarterly Report on Form 10-Q, a control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that it will detect or uncover failures within the company to disclose material information otherwise required to be set forth in the reports we submit under the Exchange Act.

There was no change in our internal control over financial reporting that occurred during the quarter ended June 30, 2023 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II. OTHER INFORMATION

Item 1. Legal Proceedings

From time to time, we may be involved in various legal and regulatory matters that arise in the ordinary course of business. As previously disclosed, on July 15, 2020, we provided PRCM Advisers with a notice of termination of the Management Agreement for "cause" in accordance with Section 15(a) of the Management Agreement. We terminated the Management Agreement for "cause" on the basis of certain material breaches and certain events of gross negligence on the part of PRCM Advisers in the performance of its duties under the Management Agreement. On July 21, 2020, PRCM Advisers filed a complaint against us in the United States District Court for the Southern District of New York, or the Court. Subsequently, Pine River Domestic Management L.P. and Pine River Capital Management L.P. were added as plaintiffs to the matter. As amended, the complaint, or the Federal Complaint, alleges, among other things, the misappropriation of trade secrets in violation of both the Defend Trade Secrets Act and New York common law, breach of contract, breach of the implied covenant of good faith and fair dealing, unfair competition and business practices, unjust enrichment, conversion, and tortious interference with contract. The Federal Complaint seeks, among other things, an order enjoining us from making any use of or disclosing PRCM Advisers' trade secret, proprietary, or confidential information; damages in an amount to be determined at a hearing and/or trial; disgorgement of our wrongfully obtained profits; and fees and costs incurred by the plaintiffs in pursuing the action. We have filed our answer to the Federal Complaint and made counterclaims against PRCM Advisers and Pine River Capital Management L.P. On May 5, 2022, the plaintiffs filed a motion for judgment on the pleadings, seeking judgment in their favor on all but one of our counterclaims and on one of our affirmative defenses. We have opposed the motion for judgment on the pleadings, which is pending with the Court. Discovery has commenced and is ongoing. Our board of directors believes the Federal Complaint is without merit and that we have fully complied with the terms of the Management Agreement.

Item 1A. Risk Factors

There have been no material changes to the risk factors set forth under the heading "Item 1A. Risk Factors" of our Annual Report on Form 10-K for the year ended December 31, 2022, or the Form 10-K. The materialization of any risks and uncertainties identified in our Forward-Looking Statements contained in this Quarterly Report on Form 10-Q, together with those previously disclosed in the Form 10-K or those that are presently unforeseen could result in significant adverse effects on our financial condition, results of operations, and cash flows. See Item 2, "*Management's Discussion and Analysis of Financial Condition and Results of Operations - Forward-Looking Statements*" in this Quarterly Report on Form 10-Q.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds

(a) None.

(b) None.

(c) Our preferred share repurchase program allows for the repurchase of up to an aggregate of 5,000,000 shares of the company's preferred stock, which includes the 8.125% Series A Fixed-to-Floating Rate Cumulative Redeemable Preferred Stock, 7.625% Series B Fixed-to-Floating Rate Cumulative Redeemable Preferred Stock and 7.25% Series C Fixed-to-Floating Rate Cumulative Redeemable Preferred Stock. Preferred shares may be repurchased from time to time through privately negotiated transactions or open market transactions, pursuant to trading plans in accordance with Rule 10b5-1 under the Securities Exchange Act of 1934, as amended, or the Exchange Act, or by any combination of such methods. The manner, price, number and timing of preferred share repurchases are subject to a variety of factors, including market conditions and applicable SEC rules. The preferred share repurchase program does not require the purchase of any minimum number of shares, and, subject to SEC rules, purchases may be commenced or suspended at any time without prior notice. The preferred share repurchase program does not have an expiration date.

The following table reflects purchases of our 8.125% Series A Fixed-to-Floating Rate Cumulative Redeemable Preferred Stock, 7.625% Series B Fixed-to-Floating Rate Cumulative Redeemable Preferred Stock and 7.25% Series C Fixed-to-Floating Rate Cumulative Redeemable Preferred Stock under the preferred share repurchase program during the three months ended June 30, 2023:

Period	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans of Programs	Maximum Number of Shares that May Yet Be Purchased Under the Plans or Programs (1)
Series A Preferred Stock:				
April 1, 2023 through April 30, 2023	—	$ —	—	N/A
May 1, 2023 through May 31, 2023	217,012	19.87	217,012	N/A
June 1, 2023 through June 30, 2023	8,874	20.56	8,874	N/A
Total	225,886	$ 19.90	225,886	N/A
Series B Preferred Stock:				
April 1, 2023 through April 30, 2023	—	$ —	—	N/A
May 1, 2023 through May 31, 2023	177,739	18.78	177,739	N/A
June 1, 2023 through June 30, 2023	37,333	19.95	37,333	N/A
Total	215,072	$ 18.98	215,072	N/A
Series C Preferred Stock:				
April 1, 2023 through April 30, 2023	—	$ —	—	N/A
May 1, 2023 through May 31, 2023	50,871	18.65	50,871	N/A
June 1, 2023 through June 30, 2023	21,989	19.99	21,989	N/A
Total	72,860	$ 19.05	72,860	N/A

(1) Our preferred share repurchase program allows for the repurchase of up to an aggregate of 5,000,000 shares of the company's preferred stock, which includes the 8.125% Series A Fixed-to-Floating Rate Cumulative Redeemable Preferred Stock, 7.625% Series B Fixed-to-Floating Rate Cumulative Redeemable Preferred Stock and 7.25% Series C Fixed-to-Floating Rate Cumulative Redeemable Preferred Stock. As of June 30, 2023, we had repurchased an aggregate of 3,471,768 preferred shares under the program and had remaining authorization to repurchase up to 1,528,232 preferred shares.

Our common share repurchase program allows for the repurchase of up to an aggregate of 9,375,000 shares of the company's common stock. Common shares may be repurchased from time to time through privately negotiated transactions or open market transactions, pursuant to a trading plan in accordance with Rules 10b5-1 and 10b-18 under the Exchange Act or by any combination of such methods. The manner, price, number and timing of common share repurchases are subject to a variety of factors, including market conditions and applicable SEC rules. The common share repurchase program does not require the purchase of any minimum number of shares, and, subject to SEC rules, purchases may be commenced or suspended at any time without prior notice. The common share repurchase program does not have an expiration date. As of June 30, 2023, we had repurchased 3,637,028 common shares under the program for a total cost of $208.5 million.

The following table reflects purchases under the common share repurchase program during the three months ended June 30, 2023:

Period	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans of Programs	Maximum Number of Shares that May Yet Be Purchased Under the Plans or Programs
April 1, 2023 through April 30, 2023	—	$ —	—	6,331,425
May 1, 2023 through May 31, 2023	593,453	11.89	593,453	5,737,972
June 1, 2023 through June 30, 2023	—	—	—	5,737,972
Total	593,453	$ 11.89	593,453	5,737,972

Item 3. Defaults Upon Senior Securities

None.

Item 4. Mine Safety Disclosures

None.

Item 5. Other Information

(a) None.

(b) None.

(c) On May 10, 2023, Matt Keen, our Vice President and Chief Technology Officer, adopted a written plan intended to satisfy the affirmative defense conditions of Rule 10b5–1(c) of the Exchange Act. As authorized by our stock ownership guidelines, in connection with the vesting of any long-term equity incentive compensation, our executive officers are authorized to sell up to fifty percent of shares vesting in order to pay the withholding tax obligations associated with such vesting. Pursuant to the written plan, Mr. Keen has elected to sell a number of shares sufficient to cover the local, state and federal tax liability associated with each vesting of long-term equity incentive compensation, subject to the maximum of fifty percent of shares vesting. The written plan shall take effect ninety days after its adoption and shall remain in effect until amended or terminated.

Except as set forth above, none of our directors or executive officers adopted or terminated a contract, instruction or written plan for the purchase or sale of our securities during the three months ended June 30, 2023.

Item 6. Exhibits

A list of exhibits to this Quarterly Report on Form 10-Q is set forth below.

Exhibit Number	Exhibit Description
3.1	Articles of Amendment and Restatement of Two Harbors Investment Corp. (incorporated by reference to Exhibit 99.1 to Annex B filed with Amendment No. 4 to the Registrant's Registration Statement on Form S-4 filed with the SEC on October 8, 2009).
3.2	Articles of Amendment to the Articles of Amendment and Restatement of Two Harbors Investment Corp. (incorporated by reference to Exhibit 99.1 to the Registrant's Current Report on Form 8-K filed with the SEC on December 19, 2012).
3.3	Articles of Amendment to the Articles of Amendment and Restatement of Two Harbors Investment Corp., effective as of 5:01 PM Eastern Time on November 1, 2017 (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed with the SEC on November 2, 2017).
3.4	Articles of Amendment to the Articles of Amendment and Restatement of Two Harbors Investment Corp., effective as of 5:02 PM Eastern Time on November 1, 2017 (incorporated by reference to Exhibit 3.2 to the Registrant's Current Report on Form 8-K filed with the SEC on November 2, 2017).
3.5	Articles of Amendment to the Articles of Amendment and Restatement of Two Harbors Investment Corp. (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed with the SEC on September 23, 2020).
3.6	Articles of Amendment to the Articles of Amendment and Restatement of Two Harbors Investment Corp., effective as of 5:01 PM Eastern Time on November 1, 2022 (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed with the SEC on November 2, 2022).
3.7	Articles of Amendment to the Articles of Amendment and Restatement of Two Harbors Investment Corp., effective as of 5:02 PM Eastern Time on November 1, 2022 (incorporated by reference to Exhibit 3.2 to the Registrant's Current Report on Form 8-K filed with the SEC on November 2, 2022).
3.8	Articles Supplementary to the Articles of Amendment to the Articles of Amendment and Restatement of Two Harbors Investment Corp. designating the shares of 8.125% Series A Fixed-to-Floating Rate Cumulative Redeemable Preferred Stock, $0.01 par value per share (incorporated by reference to Exhibit 3.3 of the Registrant's Form 8-A filed with the SEC on March 13, 2017).
3.9	Articles Supplementary to the Articles of Amendment to the Articles of Amendment and Restatement of Two Harbors Investment Corp. designating the shares of 7.625% Series B Fixed-to-Floating Rate Cumulative Redeemable Preferred Stock, $0.01 par value per share (incorporated by reference to Exhibit 3.4 of the Registrant's Form 8-A filed with the SEC on July 17, 2017).
3.10	Articles Supplementary to the Articles of Amendment to the Articles of Amendment and Restatement of Two Harbors Investment Corp. designating the shares of 7.25% Series C Fixed-to-Floating Rate Cumulative Redeemable Preferred Stock, $0.01 par value per share (incorporated by reference to Exhibit 3.7 of the Registrant's Form 8-A filed with the SEC on November 22, 2017).
3.11	Articles Supplementary to the Articles of Amendment to the Articles of Amendment and Restatement of Two Harbors Investment Corp. reclassifying and redesignating (i) all 3,000,000 authorized but unissued shares of 7.75% Series D Cumulative Redeemable Preferred Stock, $0.01 par value per share, as shares of undesignated preferred stock, and (ii) all 8,000,000 authorized but unissued shares of 7.50% Series E Cumulative Redeemable Preferred Stock, $0.01 par value per share, as shares of undesignated preferred stock (incorporated by reference to Exhibit 3.1 of the Registrant's Current Report on Form 8-K filed with the SEC on March 19, 2021).
3.12	Amended and Restated Bylaws of Two Harbors Investment Corp. (incorporated by reference to Exhibit 3.2 to the Registrant's Current Report on Form 8-K filed with the SEC on September 23, 2020).
31.1	Certification of the Chief Executive Officer, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. (filed herewith)
31.2	Certification of the Chief Financial Officer, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. (filed herewith)
32.1	Certification of the Chief Executive Officer, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. (furnished herewith)
32.2	Certification of the Chief Financial Officer, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. (furnished herewith)

Exhibit Number	Exhibit Description
101	Financial statements from the Quarterly Report on Form 10-Q of Two Harbors Investment Corp. for the three months ended June 30, 2023, filed with the SEC on August 1, 2023, formatted in Inline XBRL: (i) the Condensed Consolidated Balance Sheets, (ii) the Condensed Consolidated Statements of Comprehensive Income (Loss), (iii) the Condensed Consolidated Statements of Stockholders' Equity, (iv) the Condensed Consolidated Statements of Cash Flows, and (v) the Notes to the Condensed Consolidated Financial Statements. (filed herewith)
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101). (filed herewith)

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

			TWO HARBORS INVESTMENT CORP.
Dated:	August 1, 2023	By:	/s/ William Greenberg
			William Greenberg President and Chief Executive Officer (Principal Executive Officer)
Dated:	August 1, 2023	By:	/s/ Mary Riskey
			Mary Riskey Chief Financial Officer (Principal Financial and Accounting Officer)

EXHIBIT 31.1

CHIEF EXECUTIVE OFFICER CERTIFICATION PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, William Greenberg, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Two Harbors Investment Corp.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant’s other certifying officers and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) Evaluated the effectiveness of the registrant’s disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) Disclosed in this report any change in the registrant’s internal control over financial reporting that occurred during the registrant’s most recent fiscal quarter (the registrant’s fourth quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant’s internal control over financial reporting; and

5. The registrant’s other certifying officers and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant’s auditors and the audit committee of the registrant’s board of directors (or persons performing the equivalent functions):

a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant’s ability to record, process, summarize and report financial information; and

b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant’s internal control over financial reporting.

Date: August 1, 2023

/s/ William Greenberg
William Greenberg
President and Chief Executive Officer

EXHIBIT 31.2

CHIEF FINANCIAL OFFICER CERTIFICATION PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Mary Riskey, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Two Harbors Investment Corp.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officers and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officers and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date:	August 1, 2023	/s/ Mary Riskey
		Mary Riskey
		Chief Financial Officer

EXHIBIT 32.1

CERTIFICATION

Pursuant to 18 U.S.C. §1350, the undersigned officer of Two Harbors Investment Corp. (the "Registrant") hereby certifies that the Registrant's Quarterly Report on Form 10-Q for the three months ended June 30, 2023 (the "Quarterly Report") fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934 and that the information contained in the Quarterly Report fairly presents, in all material respects, the financial condition and results of operations of the Registrant.

Date: August 1, 2023

/s/ William Greenberg
William Greenberg
President and Chief Executive Officer

The foregoing certification is being furnished solely pursuant to 18 U.S.C. §1350 and is not being filed as part of the Quarterly Report or as a separate disclosure document.

EXHIBIT 32.2

CERTIFICATION

Pursuant to 18 U.S.C. §1350, the undersigned officer of Two Harbors Investment Corp. (the “Registrant”) hereby certifies that the Registrant’s Quarterly Report on Form 10-Q for the three months ended June 30, 2023 (the “Quarterly Report”) fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934 and that the information contained in the Quarterly Report fairly presents, in all material respects, the financial condition and results of operations of the Registrant.

Date: August 1, 2023

/s/ Mary Riskey
Mary Riskey
Chief Financial Officer

The foregoing certification is being furnished solely pursuant to 18 U.S.C. §1350 and is not being filed as part of the Quarterly Report or as a separate disclosure document.