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: March 31, 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 (State or Other Jurisdiction of Incorporation or Organization)	**27-0312904** (I.R.S. Employer Identification No.)
1601 Utica Avenue South, Suite 900 **St. Louis Park, Minnesota** (Address of Principal Executive Offices)	**55416** (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 April 27, 2023, there were 96,664,882 shares of outstanding common stock, par value $0.01 per share, issued and outstanding.

TWO HARBORS INVESTMENT CORP.

INDEX

PART I. FINANCIAL INFORMATION

Item 1. Financial Statements

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

	March 31, 2023	December 31, 2022
ASSETS	(unaudited)	
Available-for-sale securities, at fair value (amortized cost $9,126,349 and $8,114,627, respectively; allowance for credit losses $5,922 and $6,958, respectively)	$ 8,960,820	$ 7,778,734
Mortgage servicing rights, at fair value	3,072,445	2,984,937
Cash and cash equivalents	708,210	683,479
Restricted cash	117,351	443,026
Accrued interest receivable	40,826	36,018
Due from counterparties	317,905	253,374
Derivative assets, at fair value	66,013	26,438
Reverse repurchase agreements	483,916	1,066,935
Other assets	172,805	193,219
Total Assets (1)	$ 13,940,291	$ 13,466,160
LIABILITIES AND STOCKHOLDERS' EQUITY		
Liabilities:		
Repurchase agreements	$ 9,084,712	$ 8,603,011
Revolving credit facilities	1,292,831	1,118,831
Term notes payable	398,326	398,011
Convertible senior notes	282,840	282,496
Derivative liabilities, at fair value	1,693	34,048
Due to counterparties	347,337	541,709
Dividends payable	70,746	64,504
Accrued interest payable	74,916	94,034
Commitments and contingencies (see Note 15)	—	—
Other liabilities	141,207	145,991
Total Liabilities (1)	11,694,608	11,282,635
Stockholders' Equity:		
Preferred stock, par value $0.01 per share; 100,000,000 shares authorized and 26,092,050 and 26,092,050 shares issued and outstanding, respectively ($652,301 and $652,301 liquidation preference, respectively)	630,999	630,999
Common stock, par value $0.01 per share; 175,000,000 shares authorized and 96,664,318 and 86,428,845 shares issued and outstanding, respectively	967	864
Additional paid-in capital	5,829,676	5,645,998
Accumulated other comprehensive loss	(152,780)	(278,711)
Cumulative earnings	1,276,563	1,453,371
Cumulative distributions to stockholders	(5,339,742)	(5,268,996)
Total Stockholders' Equity	2,245,683	2,183,525
Total Liabilities and Stockholders' Equity	$ 13,940,291	$ 13,466,160

(1) The condensed consolidated balance sheets include assets and liabilities of consolidated variable interest entities, or VIEs. At March 31, 2023 and December 31, 2022, assets of the VIEs totaled $486,041 and $497,921, and liabilities of the VIEs totaled $476,932 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 LOSS (unaudited)
(in thousands, except share data)

	Three Months Ended March 31, 2023	Three Months Ended March 31, 2022
Interest income:		
Available-for-sale securities	$ 97,038	$ 44,647
Other	19,555	199
Total interest income	116,593	44,846
Interest expense:		
Repurchase agreements	104,355	8,343
Revolving credit facilities	25,656	5,676
Term notes payable	7,643	3,256
Convertible senior notes	4,836	5,042
Total interest expense	142,490	22,317
Net interest (expense) income	(25,897)	22,529
Other (loss) income:		
Gain (loss) on investment securities	10,798	(52,342)
Servicing income	153,320	136,626
(Loss) gain on servicing asset	(28,079)	410,624
Loss on interest rate swap and swaption agreements	(82,154)	(38,041)
Loss on other derivative instruments	(155,771)	(101,762)
Other loss	—	(44)
Total other (loss) income	(101,886)	355,061
Expenses:		
Servicing expenses	28,366	24,704
Compensation and benefits	14,083	12,193
Other operating expenses	10,484	6,625
Total expenses	52,933	43,522
(Loss) income before income taxes	(180,716)	334,068
(Benefit from) provision for income taxes	(3,908)	48,798
Net (loss) income	(176,808)	285,270
Dividends on preferred stock	(12,365)	(13,747)
Net (loss) income attributable to common stockholders	$ (189,173)	$ 271,523
Basic (loss) earnings per weighted average common share	$ (2.05)	$ 3.14
Diluted (loss) earnings per weighted average common share	$ (2.05)	$ 2.86
Weighted average number of shares of common stock:		
Basic	92,575,840	85,999,628
Diluted	92,575,840	96,205,551

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

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

	Three Months Ended March 31,	
	2023	**2022**
Comprehensive loss:		
Net (loss) income	$ (176,808)	$ 285,270
Other comprehensive income (loss):		
Unrealized gain (loss) on available-for-sale securities	125,931	(331,845)
Other comprehensive income (loss)	125,931	(331,845)
Comprehensive loss	(50,877)	(46,575)
Dividends on preferred stock	(12,365)	(13,747)
Comprehensive loss attributable to common stockholders	$ (63,242)	$ (60,322)

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
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

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)

	Three Months Ended March 31, 2023	Three Months Ended March 31, 2022
Cash Flows From Operating Activities:		
Net (loss) income	$ (176,808)	$ 285,270
Adjustments to reconcile net (loss) income to net cash provided by (used in) operating activities:		
Amortization of premiums and discounts on investment securities, net	7,978	32,504
Amortization of deferred debt issuance costs on term notes payable and convertible senior notes	659	648
(Reversal of) provision for credit losses on investment securities	(142)	1,114
Realized and unrealized (gains) losses on investment securities	(10,656)	51,228
Loss (gain) on servicing asset	28,079	(410,624)
Realized and unrealized loss on interest rate swaps and swaptions	85,765	37,300
Unrealized losses (gains) on other derivative instruments	67,484	(90,261)
Equity based compensation	6,052	4,161
Net change in assets and liabilities:		
(Increase) decrease in accrued interest receivable	(4,808)	1,106
(Increase) decrease in deferred income taxes, net	(5,997)	48,798
Decrease in accrued interest payable	(19,118)	(8,391)
Change in other operating assets and liabilities, net	21,627	(4,198)
Net cash provided by (used in) operating activities	115	(51,345)
Cash Flows From Investing Activities:		
Purchases of available-for-sale securities	(2,553,519)	(2,609,992)
Proceeds from sales of available-for-sale securities	1,360,742	2,012,620
Principal payments on available-for-sale securities	139,442	371,666
Purchases of mortgage servicing rights, net of purchase price adjustments	(117,441)	(487,761)
Proceeds from sales of mortgage servicing rights	1,854	—
(Purchases) short sales of derivative instruments, net	(227)	40,998
(Payments for termination and settlement) proceeds from sales and settlement of derivative instruments, net	(224,952)	107,472
Payments for reverse repurchase agreements	(966,485)	(381,280)
Proceeds from reverse repurchase agreements	1,549,504	377,337
Decrease in due to counterparties, net	(258,903)	(142,589)
Net cash used in investing activities	$ (1,069,985)	$ (711,529)

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)

	Three Months Ended March 31,	
	2023	**2022**
Cash Flows From Financing Activities:		
Proceeds from repurchase agreements	$ 11,321,136	$ 7,955,364
Principal payments on repurchase agreements	(10,839,435)	(7,739,153)
Proceeds from revolving credit facilities	174,000	150,000
Repayment of convertible senior notes	—	(143,774)
Proceeds from issuance of common stock, net of offering costs	177,729	323
Dividends paid on preferred stock	(12,365)	(13,747)
Dividends paid on common stock	(52,139)	(58,665)
Net cash provided by financing activities	768,926	150,348
Net decrease in cash, cash equivalents and restricted cash	(300,944)	(612,526)
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	$ 825,561	$ 1,476,144
Supplemental Disclosure of Cash Flow Information:		
Cash paid for interest	$ 153,280	$ 25,750
Cash paid (received) for taxes, net	$ 42	$ (32)
Noncash Activities:		
Dividends declared but not paid at end of period	$ 70,746	$ 72,558

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 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 March 31, 2023 and results of operations for all periods presented have been made. The results of operations for the three months ended March 31, 2023 should not be construed as indicative of the results to be expected for future periods or the full year.

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, 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, as its preferred alternative rate 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 are in process, if not completed.

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 in anticipation 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 majority of the Company's material contracts that are or were indexed to USD-LIBOR have been amended to transition to an alternative benchmark, where necessary. As of March 31, 2023, only the Company's term notes incorporate LIBOR as the referenced rate and mature after the phase-out of LIBOR. However, the related agreements have provisions in place that provide for an alternative to LIBOR upon its phase-out. Additionally, as of March 31, 2023, the Company held exchange-traded Eurodollar futures, whose prices move in response to LIBOR and were set to mature after the phase-out of LIBOR. In April 2023, each of the Company's outstanding Eurodollar futures contracts with maturities after June 30, 2023 was converted into three-month SOFR futures contracts with similar characteristics. As of March 31, 2023, the Company had no other financing arrangements or derivative instruments that incorporate LIBOR as the referenced rate and are set to mature after the phase-out of LIBOR. Additionally, each series of the Company's fixed-to-floating preferred stock that becomes redeemable at the time the stock begins to pay a LIBOR-based rate has existing LIBOR cessation fallback language. 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.

TWO HARBORS INVESTMENT CORP.

Notes to the Condensed Consolidated Financial Statements (unaudited)

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 March 31, 2023 and December 31, 2022:

(in thousands)	March 31, 2023	December 31, 2022
Note receivable [(1)]	$ 398,326	$ 398,011
Restricted cash	29,332	31,691
Accrued interest receivable [(1)]	425	400
Other assets	57,958	67,819
Total Assets	$ 486,041	$ 497,921
Term notes payable	$ 398,326	$ 398,011
Revolving credit facilities	48,850	23,850
Accrued interest payable	681	560
Other liabilities	29,075	31,531
Total Liabilities	$ 476,932	$ 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 March 31, 2023 and December 31, 2022:

(in thousands)	March 31, 2023	December 31, 2022
Agency:		
Federal National Mortgage Association	$ 4,968,798	$ 4,112,556
Federal Home Loan Mortgage Corporation	3,615,921	3,332,314
Government National Mortgage Association	75,975	208,706
Other	172,846	—
Non-Agency	127,280	125,158
Total available-for-sale securities	$ 8,960,820	$ 7,778,734

At March 31, 2023 and December 31, 2022, the Company pledged AFS securities with a carrying value of $9.0 billion and $7.4 billion, respectively, as collateral for repurchase agreements. See Note 11 - *Repurchase Agreements*.

At March 31, 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.

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 March 31, 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 $127.3 million and $125.2 million, respectively.

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

	March 31, 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	$ 8,848,397	$ 189,182	$ (84,550)	$ 8,953,029	$ —	$ 32,146	$ (185,516)	$ 8,799,659
Interest-only	875,510	42,232	—	42,232	(5,274)	1,579	(4,656)	33,881
Total Agency	9,723,907	231,414	(84,550)	8,995,261	(5,274)	33,725	(190,172)	8,833,540
Non-Agency	1,242,893	8,070	(326)	131,088	(648)	523	(3,683)	127,280
Total	$ 10,966,800	$ 239,484	$ (84,876)	$ 9,126,349	$ (5,922)	$ 34,248	$ (193,855)	$ 8,960,820

TWO HARBORS INVESTMENT CORP.

Notes to the Condensed Consolidated Financial Statements (unaudited)

	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 March 31, 2023:

	March 31, 2023		
(in thousands)	**Agency**	**Non-Agency**	**Total**
< 1 year	$ 1,078	$ —	$ 1,078
≥ 1 and < 3 years	22,974	—	22,974
≥ 3 and < 5 years	386,697	119,157	505,854
≥ 5 and < 10 years	8,004,076	4,262	8,008,338
≥ 10 years	418,715	3,861	422,576
Total	$ 8,833,540	$ 127,280	$ 8,960,820

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 table presents the changes for the three months ended March 31, 2023 and 2022 in the allowance for credit losses on Agency and non-Agency AFS securities:

	Three Months Ended March 31, 2023			Three Months Ended March 31, 2022		
(in thousands)	Agency	Non-Agency	Total	Agency	Non-Agency	Total
Allowance for credit losses at beginning of period	$ (6,785)	$ (173)	$ (6,958)	$ (12,851)	$ (1,387)	$ (14,238)
Additions on securities for which credit losses were not previously recorded	—	(318)	(318)	(2)	—	(2)
(Increase) decrease on securities with previously recorded credit losses	827	(367)	460	(2,493)	1,381	(1,112)
Write-offs	684	210	894	3,779	—	3,779
Allowance for credit losses at end of period	$ (5,274)	$ (648)	$ (5,922)	$ (11,567)	$ (6)	$ (11,573)

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 March 31, 2023 and December 31, 2022. At March 31, 2023 and December 31, 2022, the Company held 646 and 704 AFS securities, respectively; of the securities for which an allowance for credit losses has not been recorded, 431 and 553 were in an unrealized loss position for less than twelve consecutive months. At both March 31, 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.

	March 31, 2023					
	Less than 12 Months		Unrealized Loss Position for 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	$ 6,206,214	$ (187,843)	$ —	$ —	$ 6,206,214	$ (187,843)
Non-Agency	119,252	(3,294)	—	—	119,252	(3,294)
Total	$ 6,325,466	$ (191,137)	$ —	$ —	$ 6,325,466	$ (191,137)

	December 31, 2022					
	Less than 12 Months		Unrealized Loss Position for 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)

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 loss. The following table presents details around sales of AFS securities during the three months ended March 31, 2023 and 2022:

	Three Months Ended March 31,	
(in thousands)	2023	2022
Proceeds from sales of available-for-sale securities	$ 1,360,742	$ 2,012,620
Amortized cost of available-for-sale securities sold	(1,393,484)	(2,067,471)
Total realized losses on sales, net	$ (32,742)	$ (54,851)
Gross realized gains	$ 14,070	$ 14,695
Gross realized losses	(46,812)	(69,546)
Total realized losses on sales, net	$ (32,742)	$ (54,851)

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 months ended March 31, 2023 and 2022.

	Three Months Ended March 31,	
(in thousands)	2023	2022
Balance at beginning of period	$ 2,984,937	$ 2,191,578
Purchases of mortgage servicing rights	118,341	484,805
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)]	20,421	524,913
Other changes in fair value [(2)]	(47,661)	(114,289)
Other changes [(3)]	(900)	2,956
Balance at end of period [(4)]	$ 3,072,445	$ 3,089,963

(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 March 31, 2023 and December 31, 2022, the Company pledged MSR with a carrying value of $2.9 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 March 31, 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)	March 31, 2023	December 31, 2022
Weighted average prepayment speed:	6.8 %	6.9 %
Impact on fair value of 10% adverse change	$ (75,183)	$ (50,192)
Impact on fair value of 20% adverse change	$ (150,519)	$ (100,995)
Weighted average delinquency:	0.9 %	0.9 %
Impact on fair value of 10% adverse change	$ (4,532)	$ (3,880)
Impact on fair value of 20% adverse change	$ (9,079)	$ (7,777)
Weighted average option-adjusted spread:	5.4 %	5.3 %
Impact on fair value of 10% adverse change	$ (60,373)	$ (44,431)
Impact on fair value of 20% adverse change	$ (121,961)	$ (87,354)
Weighted average per loan annual cost to service:	$ 67.97	$ 67.92
Impact on fair value of 10% adverse change	$ (24,272)	$ (20,148)
Impact on fair value of 20% adverse change	$ (47,776)	$ (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 loss for the three months ended March 31, 2023 and 2022:

	Three Months Ended March 31,	
(in thousands)	2023	2022
Servicing fee income	$ 129,237	$ 135,214
Ancillary and other fee income	369	470
Float income	23,714	942
Total	$ 153,320	$ 136,626

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 $100.3 million and $119.0 million and were included in other assets on the condensed consolidated balance sheets as of March 31, 2023 and December 31, 2022, respectively. At March 31, 2023 and December 31, 2022, mortgage loans in 60+ day delinquent status (whether or not subject to forbearance) accounted for approximately 0.7% 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 March 31, 2023 and December 31, 2022, the Company had pledged servicing advances with a carrying value of $58.0 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 March 31, 2023 and December 31, 2022:

	March 31, 2023		December 31, 2022	
(dollars in thousands)	Number of Loans	Unpaid Principal Balance	Number of Loans	Unpaid Principal Balance
Mortgage servicing rights	831,028	$ 212,444,503	809,025	$ 204,876,693
Residential mortgage loans	626	365,556	636	374,005
Other assets	5	301	4	269
Total serviced mortgage assets	831,659	$ 212,810,360	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 March 31, 2023 and December 31, 2022:

(in thousands)	March 31, 2023	December 31, 2022
Restricted cash balances held by trading counterparties:		
For securities trading activity	$ 5,269	$ 2,202
For derivatives trading activity	1	79,220
For servicing activities	33,164	36,690
As restricted collateral for borrowings	78,857	324,854
Total restricted cash balances held by trading counterparties	117,291	442,966
Restricted cash balance pursuant to letter of credit on office lease	60	60
Total	$ 117,351	$ 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 March 31, 2023 and December 31, 2022 that sum to the total of the same such amounts shown in the statements of cash flows:

(in thousands)	March 31, 2023	December 31, 2022
Cash and cash equivalents	$ 708,210	$ 683,479
Restricted cash	117,351	443,026
Total cash, cash equivalents and restricted cash	$ 825,561	$ 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.*, LIBOR, 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 March 31, 2023 and December 31, 2022:

	March 31, 2023			
	Derivative Assets		Derivative Liabilities	
(in thousands)	Fair Value	Notional	Fair Value	Notional
Inverse interest-only securities	$ 15,850	$ 188,085	$ —	$ —
Interest rate swap agreements	—	—	—	8,404,872
Swaptions, net	54	(200,000)	—	—
TBAs	50,109	3,449,000	(1,693)	269,000
Futures, net	—	—	—	(6,945,550)
Total	$ 66,013	$ 3,437,085	$ (1,693)	$ 1,728,322

	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 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.

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

Derivative Instruments	Location of Gain (Loss) Recognized in Income	Amount of Gain (Loss) Recognized in Income	
(in thousands)		Three Months Ended March 31,	
		2023	2022
Interest rate risk management:			
TBAs	Loss on other derivative instruments	$ (17,164)	$ (198,836)
Futures	Loss on other derivative instruments	(140,087)	106,095
Options on futures	Loss on other derivative instruments	—	(2,066)
Interest rate swaps - Payers	Loss on interest rate swap and swaption agreements	(71,760)	437,160
Interest rate swaps - Receivers	Loss on interest rate swap and swaption agreements	(10,368)	(477,139)
Swaptions	Loss on interest rate swap and swaption agreements	(26)	1,938
Non-risk management:			
Inverse interest-only securities	Loss on other derivative instruments	1,480	(6,955)
Total		$ (237,925)	$ (139,803)

For the three months ended March 31, 2023 and 2022, the Company recognized $3.6 million of income and $0.7 million of expense, respectively, for the accrual and/or settlement of the net interest expense associated with its interest rate swaps and caps. The income resulted from paying either a fixed interest rate or a floating interest rate (OIS or SOFR) and receiving either a floating interest rate (OIS or SOFR) or a fixed interest rate on an average $3.2 billion and $24.5 billion notional, respectively.

The following tables present information with respect to the volume of activity in the Company's derivative instruments during the three months ended March 31, 2023 and 2022:

	Three Months Ended March 31, 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	$ —	$ (8,371)	$ 188,085	$ 192,729	$ —
Interest rate swap agreements	—	9,992,941	(1,588,069)	8,404,872	3,196,969	(18,580)
Swaptions, net	—	(200,000)	—	(200,000)	(57,778)	—
TBAs, net	3,826,000	14,666,000	(14,774,000)	3,718,000	4,073,467	(88,483)
Futures, net	(18,285,452)	(13,034,050)	24,373,952	(6,945,550)	(15,622,322)	131
Total	$ (14,262,996)	$ 11,424,891	$ 8,003,512	$ 5,165,407	$ (8,216,935)	$ (106,932)

TWO HARBORS INVESTMENT CORP.

Notes to the Condensed Consolidated Financial Statements (unaudited)

(in thousands)	Three Months Ended March 31, 2022					
	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	$ —	$ (14,883)	$ 232,218	$ 240,044	$ (1,765)
Interest rate swap agreements	20,387,300	10,791,805	(6,879,458)	24,299,647	24,538,895	(56,264)
Swaptions, net	(1,761,000)	(1,000,000)	—	(2,761,000)	(2,244,333)	—
TBAs, net	4,116,000	20,518,000	(20,012,000)	4,622,000	3,611,400	(190,765)
Futures, net	(5,829,600)	(4,866,100)	3,179,050	(7,516,650)	(9,786,491)	(2,113)
Options on futures, net	—	2,000	—	2,000	622	—
Total	$ 17,159,801	$ 25,445,705	$ (23,727,291)	$ 18,878,215	$ 16,360,137	$ (250,907)

(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 losses (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 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 March 31, 2023 and December 31, 2022, the Company had $23.5 million and $23.8 million, respectively, of interest-only securities, and $3.1 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.*, LIBOR, 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.

As of March 31, 2023, the Company held exchange-traded Eurodollar futures, whose prices move in response to LIBOR and were set to mature after the phase-out of LIBOR. In April 2023, each of the Company's outstanding Eurodollar futures contracts with maturities after June 30, 2023 was converted into three-month SOFR futures contracts with similar characteristics. As of March 31, 2023, the Company did not hold any other derivative instruments that incorporate LIBOR as the referenced rate and are set to mature after the phase-out of LIBOR. See Note 2 - *Basis of Presentation and Significant Accounting Policies* for further discussion of the transition away from LIBOR.

TWO HARBORS INVESTMENT CORP.

Notes to the Condensed Consolidated Financial Statements (unaudited)

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 March 31, 2023 and December 31, 2022:

	March 31, 2023				
				Net Carrying Value (4)	
(in thousands)	Notional Amount (1)	Cost Basis (2)	Market Value (3)	Derivative Assets	Derivative Liabilities
Purchase contracts	$ 3,802,000	$ 3,726,650	$ 3,775,210	$ 50,109	$ (1,549)
Sale contracts	(84,000)	(82,110)	(82,254)	—	(144)
TBAs, net	$ 3,718,000	$ 3,644,540	$ 3,692,956	$ 50,109	$ (1,693)

	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.

TWO HARBORS INVESTMENT CORP.

Notes to the Condensed Consolidated Financial Statements (unaudited)

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 March 31, 2023 and December 31, 2022:

(dollars in thousands)	March 31, 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	$ (1,530,200)	$ —	97	$ (562,200)	$ —	95
U.S. Treasury futures - 5 year	(2,021,400)	—	97	(3,855,500)	—	95
U.S. Treasury futures - 10 year	(1,005,200)	—	91	(2,397,200)	—	90
U.S. Treasury futures - 20 year	182,500	—	91	101,000	—	90
Federal Funds futures - 30 day	—	—	0	(7,948,552)	—	92
Eurodollar futures - 3 month:						
≤ 1 year	(2,238,250)	—	185	(2,957,000)	—	184
> 1 and ≤ 2 years	(333,000)	—	444	(666,000)	—	489
Total futures	$ (6,945,550)	$ —	139	$ (18,285,452)	$ —	122

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 March 31, 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)	March 31, 2023			
Swaps Maturities	Notional Amount	Weighted Average Fixed Pay Rate	Weighted Average Receive Rate	Weighted Average Maturity (Years)
2024	$ —	— %	— %	0.00
2025	—	— %	— %	0.00
2026	2,647,671	4.730 %	4.870 %	1.96
2027	—	— %	— %	0.00
2028 and Thereafter	2,662,801	3.510 %	4.870 %	6.53
Total	$ 5,310,472	4.118 %	4.870 %	4.25

Additionally, as of March 31, 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)

	March 31, 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	4.870 %	3.805 %	1.97
2027	—	— %	— %	0.00
2028 and Thereafter	1,263,061	4.870 %	3.313 %	6.14
Total	$ 3,094,400	4.870 %	3.692 %	8.11

(1) Notional amount includes $260.0 million in forward starting interest rate swaps as of March 31, 2023.
(2) Weighted averages exclude forward starting interest rate swaps. As of March 31, 2023, the weighted average fixed receive rate on forward starting interest rate swaps was 3.3%.

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 March 31, 2023, the Company had the following outstanding interest rate swaptions:

	March 31, 2023						
(notional and dollars in thousands)	**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	$ 133	5.20	$ 200,000	5.19 %	1.0
Sale contracts:							
Payer	< 6 Months	$ (580)	$ (79)	5.20	$ (400,000)	5.72 %	1.0

(1) As of March 31, 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 March 31, 2023, the fair value of derivative financial instruments as an asset and liability position was $66.0 million and $1.7 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 March 31, 2023 and December 31, 2022, the Company had $247.2 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 $288.6 million and $189.3 million, respectively. Additionally, as of March 31, 2023 and December 31, 2022, the Company had entered into $195.3 million and $877.6 million in reverse repurchase agreements in order to effectively borrow U.S. Treasury securities and pledge them as collateral for $200.8 million and $888.3 million, respectively, of repurchase agreements (see Note 11 - *Repurchase Agreements* for further detail). These reverse repurchase agreements had the same maturities as the corresponding repurchase agreements, which were all short term as of both March 31, 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.

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 March 31, 2023 and December 31, 2022:

	March 31, 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	$ 89,193	$ (23,180)	$ 66,013	$ (1,693)	$ —	$ 64,320
Reverse repurchase agreements	483,916	—	483,916	(200,766)	(283,150)	—
Total Assets	$ 573,109	$ (23,180)	$ 549,929	$ (202,459)	$ (283,150)	$ 64,320
Liabilities:						
Repurchase agreements	$ (9,084,712)	$ —	$ (9,084,712)	$ 9,084,712	$ —	$ —
Derivative liabilities	(24,873)	23,180	(1,693)	1,693	—	—
Total Liabilities	$ (9,109,585)	$ 23,180	$ (9,086,405)	$ 9,086,405	$ —	$ —

	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 98.6% and 1.4% of its AFS securities as Level 2 and Level 3 fair value assets, respectively, at March 31, 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 March 31, 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 March 31, 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 March 31, 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 March 31, 2023. The Company did not hold any options on futures at March 31, 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 March 31, 2023			
(in thousands)	**Level 1**	**Level 2**	**Level 3**	**Total**
Assets:				
Available-for-sale securities	$ —	$ 8,833,540	$ 127,280	$ 8,960,820
Mortgage servicing rights	—	—	3,072,445	3,072,445
Derivative assets	50,109	15,904	—	66,013
Total assets	$ 50,109	$ 8,849,444	$ 3,199,725	$ 12,099,278
Liabilities:				
Derivative liabilities	$ 1,693	$ —	$ —	$ 1,693
Total liabilities	$ 1,693	$ —	$ —	$ 1,693

	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 March 31, 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:

	Three Months Ended March 31, 2023	
(in thousands)	Available-For-Sale Securities	Mortgage Servicing Rights
Beginning of period level 3 fair value	$ 125,158	$ 2,984,937
Gains (losses) included in net (loss) income:		
Realized	(548)	(48,500)
Unrealized	2,032 (1)	20,421 (2)
Reversal of provision for credit losses	(475)	—
Net gains (losses) included in net (loss) income	1,009	(28,079)
Other comprehensive income	1,113	—
Purchases	—	118,341
Sales	—	(1,854)
Settlements	—	(900)
Gross transfers into level 3	—	—
Gross transfers out of level 3	—	—
End of period level 3 fair value	$ 127,280	$ 3,072,445
Change in unrealized gains or losses for the period included in earnings for assets held at the end of the reporting period	$ 2,032 (3)	$ 19,823 (4)
Change in unrealized gains or losses for the period included in other comprehensive income (loss) for assets held at the end of the reporting period	$ 1,113	$ —

(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 loss.
(2) The change in unrealized gains or losses on MSR was recorded in (loss) gain on servicing asset on the condensed consolidated statements of comprehensive 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 loss.
(4) The change in unrealized gains or losses on MSR that were held at the end of the reporting period was recorded in (loss) gain on servicing asset on the condensed consolidated statements of comprehensive loss.

No transfers between Level 1, Level 2 or Level 3 were made during the three months ended March 31, 2023 and 2022. 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 March 31, 2023 and December 31, 2022:

March 31, 2023

Valuation Technique	Unobservable Input	Range	Weighted Average [1]
Discounted cash flow	Constant prepayment speed	6.0% - 7.5%	6.8%
	Option-adjusted spread	5.3% - 8.7%	5.4%
	Per loan annual cost to service	$67.45 - $80.84	$67.97

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 March 31, 2023, the Company had outstanding borrowings of $963.8 million 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 March 31, 2023. The Company categorizes the fair value measurement of these assets as Level 2.

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 March 31, 2023 and December 31, 2022:

	March 31, 2023		December 31, 2022	
(in thousands)	Carrying Value	Fair Value	Carrying Value	Fair Value
Assets:				
Available-for-sale securities	$ 8,960,820	$ 8,960,820	$ 7,778,734	$ 7,778,734
Mortgage servicing rights	$ 3,072,445	$ 3,072,445	$ 2,984,937	$ 2,984,937
Cash and cash equivalents	$ 708,210	$ 708,210	$ 683,479	$ 683,479
Restricted cash	$ 117,351	$ 117,351	$ 443,026	$ 443,026
Derivative assets	$ 66,013	$ 66,013	$ 26,438	$ 26,438
Reverse repurchase agreements	$ 483,916	$ 483,916	$ 1,066,935	$ 1,066,935
Other assets	$ 3,525	$ 3,525	$ 3,493	$ 3,493
Liabilities:				
Repurchase agreements	$ 9,084,712	$ 9,084,712	$ 8,603,011	$ 8,603,011
Revolving credit facilities	$ 1,292,831	$ 1,292,831	$ 1,118,831	$ 1,118,831
Term notes payable	$ 398,326	$ 378,298	$ 398,011	$ 361,905
Convertible senior notes	$ 282,840	$ 249,228	$ 282,496	$ 246,727
Derivative liabilities	$ 1,693	$ 1,693	$ 34,048	$ 34,048

Note 11. Repurchase Agreements

As of March 31, 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 5.11% and 3.95% and weighted average remaining maturities of 86 and 59 days as of March 31, 2023 and December 31, 2022, respectively. As of March 31, 2023, none of the Company’s repurchase agreements incorporated LIBOR as the referenced rate. See Note 2 - *Basis of Presentation and Significant Accounting Policies* for further discussion of the transition away from LIBOR.

At March 31, 2023 and December 31, 2022, the Company’s repurchase agreements had the following characteristics and remaining maturities:

	March 31, 2023						
	Collateral Type						
(in thousands)	Agency RMBS	Agency Other	Non-Agency Securities	Agency Derivatives	Mortgage Servicing Rights	U.S. Treasuries [(1)]	Total Amount Outstanding
Within 30 days	$ 1,371,533	$ 70,508	$ 58,528	$ 11,942	$ —	$ 200,766	$ 1,713,277
30 to 59 days	1,546,940	—	11,578	—	—	—	1,558,518
60 to 89 days	1,303,639	—	—	—	—	—	1,303,639
90 to 119 days	2,401,387	—	—	—	—	—	2,401,387
120 to 364 days	1,759,204	98,150	183	354	250,000	—	2,107,891
Total	$ 8,382,703	$ 168,658	$ 70,289	$ 12,296	$ 250,000	$ 200,766	$ 9,084,712
Weighted average borrowing rate	5.01 %	4.92 %	6.14 %	5.17 %	8.43 %	4.68 %	5.11 %

	December 31, 2022						
	Collateral Type						
(in thousands)	Agency RMBS	Agency Other	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)	March 31, 2023	December 31, 2022
Available-for-sale securities, at fair value	$ 8,952,534	$ 7,426,953
Mortgage servicing rights, at fair value [1]	430,821	667,238
Restricted cash	77,429	324,654
Due from counterparties	29,510	22,055
Derivative assets, at fair value	15,309	14,738
U.S. Treasuries [2]	195,290	877,632
Total	$ 9,700,893	$ 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 March 31, 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 March 31, 2023 and December 31, 2022, the Company had outstanding short- and long-term borrowings under revolving credit facilities of $1.3 billion and $1.1 billion with a weighted average borrowing rate of 8.09% and 7.68% and weighted average remaining maturities of 1.5 and 1.1 years, respectively. As of March 31, 2023, none of the Company's revolving credit facilities incorporated LIBOR as the referenced rate. See Note 2 - *Basis of Presentation and Significant Accounting Policies* for further discussion of the transition away from LIBOR.

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

(in thousands)	March 31, 2023	December 31, 2022
Within 30 days	$ —	$ —
30 to 59 days	—	—
60 to 89 days	—	—
90 to 119 days	329,000	—
120 to 364 days	—	200,000
One year and over	963,831	918,831
Total	$ 1,292,831	$ 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 March 31, 2023 and December 31, 2022, MSR with a carrying value of $2.0 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 March 31, 2023 and December 31, 2022, servicing advances with a carrying value of $58.0 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 March 31, 2023 and December 31, 2022, net of any unamortized deferred debt issuance costs, on the Company's condensed consolidated balance sheets. As of March 31, 2023 and December 31, 2022, the outstanding amount due on term notes payable was $398.3 million and $398.0 million, net of deferred debt issuance costs, with a weighted average interest rate of 7.65% and 7.19% and weighted average remaining maturities of 1.2 years and 1.5 years. The Company's term notes incorporate LIBOR as the referenced rate and mature after the phase-out of LIBOR. However, the related agreements have provisions in place that provide for an alternative to LIBOR upon its phase-out. See Note 2 - *Basis of Presentation and Significant Accounting Policies* for further discussion of the transition away from LIBOR.

At March 31, 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 3.25% and 3.33%, respectively, as collateral for term notes payable. Additionally, as of March 31, 2023 and December 31, 2022, $1.4 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 March 31, 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. The outstanding amount due on the 2026 notes as of March 31, 2023 and December 31, 2022 was $282.8 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 March 31, 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 March 31, 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 include that the matter is in early stages and no amount of damages has been specified. 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 March 31, 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 March 31, 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	5,321,451	$ 128,522	8.125 %	April 27, 2027	April 27, 2027	3M LIBOR + 5.660%
Series B	July 19, 2017	10,713,154	259,066	7.625 %	July 27, 2027	July 27, 2027	3M LIBOR + 5.352%
Series C	November 27, 2017	10,057,445	243,411	7.250 %	January 27, 2025	January 27, 2025	3M LIBOR + 5.011%
Total		26,092,050	$ 630,999				

(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 an annual floating rate of three-month LIBOR plus the spread indicated within each preferred class. Each series that becomes callable at the time the stock begins to pay a LIBOR-based rate has existing LIBOR cessation fallback language.

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 March 31, 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 March 31, 2023, a total of 428,549 shares of the Company's 8.125% Series A Cumulative Redeemable Preferred Stock, 786,846 shares of the Company's 7.625% Series B Cumulative Redeemable Preferred Stock and 1,742,555 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 $7.8 million, $13.8 million and $29.8 million, respectively, all during the three months ended December 31, 2022.

TWO HARBORS INVESTMENT CORP.

Notes to the Condensed Consolidated Financial Statements (unaudited)

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 March 31, 2023, the Company had 96,664,318 shares of common stock outstanding. The following table presents a reconciliation of the common shares outstanding for the three months ended March 31, 2023 and 2022:

	Number of common shares
Common shares outstanding, December 31, 2021	85,977,831
Issuance of common stock	4,868
Non-cash equity award compensation [(1)]	50,355
Common shares outstanding, March 31, 2022	86,033,054
Common shares outstanding, December 31, 2022	86,428,845
Issuance of common stock	10,121,107
Non-cash equity award compensation [(1)]	114,366
Common shares outstanding, March 31, 2023	96,664,318

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

Distributions to Stockholders

The following table presents cash dividends declared by the Company on its preferred and common stock during the three months ended March 31, 2023 and 2022:

(dollars in thousands)	**Three Months Ended March 31,**			
	2023		**2022**	
Class of Stock	**Amount**	**Per Share**	**Amount**	**Per Share**
Series A Preferred Stock	$ 2,702	$ 0.51	$ 2,920	$ 0.51
Series B Preferred Stock	$ 5,106	$ 0.48	$ 5,480	$ 0.48
Series C Preferred Stock	$ 4,557	$ 0.45	$ 5,347	$ 0.45
Common Stock	$ 58,381	$ 0.60	$ 58,811	$ 0.68

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 March 31, 2023, 117,345 shares have been issued under the plan for total proceeds of approximately $6.1 million, of which 3,680 and 4,868 shares were issued for total proceeds of $0.1 million and $0.1 million during the three months ended March 31, 2023 and 2022, 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 March 31, 2023, a total of 3,043,575 shares had been repurchased by the Company under the program for an aggregate cost of $201.5 million. No shares were repurchased during the three months ended March 31, 2023 and 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 March 31, 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 three months ended March 31, 2023. No shares were sold during the three months ended March 31, 2022.

Accumulated Other Comprehensive Loss

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

(in thousands)	March 31, 2023	December 31, 2022
Available-for-sale securities:		
Unrealized gains	$ 32,908	$ 47,656
Unrealized losses	(185,688)	(326,367)
Accumulated other comprehensive loss	$ (152,780)	$ (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 (loss) income upon the recognition of any realized gains and losses on sales as individual securities are sold. For the three months ended March 31, 2023 and 2022, the Company reclassified $63.2 million in unrealized losses and $8.4 million in unrealized gains, respectively, on sold AFS securities from accumulated other comprehensive loss to gain (loss) on investment securities on the condensed consolidated statements of comprehensive 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 three months ended March 31, 2023 and 2022:

	Three Months Ended March 31,			
	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	282,090	17.43	213,921	21.24
Vested	(114,366)	(24.14)	(50,574)	(28.20)
Forfeited	—	—	(2,123)	(24.36)
Outstanding at End of Period	636,356	$ 20.72	454,650	$ 25.07

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 three months ended March 31, 2023 and 2022:

	Three Months Ended March 31,			
	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	—	—	(511)	(27.24)
Outstanding at End of Period	487,469	$ 24.90	260,158	$ 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 three months ended March 31, 2023 and 2022:

	Three Months Ended March 31,			
	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	—	—	(219)	(60.92)
Outstanding at End of Period	—	$ —	43,829	$ 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 months ended March 31, 2023 and 2022, the Company recognized compensation related to RSUs, PSUs and restricted common stock granted pursuant to the Equity Incentive Plans of $6.1 million and $4.2 million, respectively. As of March 31, 2023, the Company had $8.6 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 1.7 years.

Note 18. Income Taxes

For the three months ended March 31, 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.

During the three months ended March 31, 2023, the Company's TRSs recognized a benefit from income taxes of $3.9 million, which was primarily due to net losses recognized on MSR and operating expenses, offset by income from MSR servicing activity. During the three months ended March 31, 2022, the Company's TRSs recognized a provision for income taxes of $48.8 million, which was primarily due to income from MSR servicing activity 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.

TWO HARBORS INVESTMENT CORP.

Notes to the Condensed Consolidated Financial Statements (unaudited)

Note 19. Earnings Per Share

The following table presents a reconciliation of the (loss) earnings and shares used in calculating basic and diluted (loss) earnings per share for the three months ended March 31, 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 March 31,	
(in thousands, except share data)	**2023**	**2022**
Basic (Loss) Earnings Per Share:		
Net (loss) income	$ (176,808)	$ 285,270
Dividends on preferred stock	(12,365)	(13,747)
Dividends and undistributed earnings allocated to participating restricted stock units	(382)	(1,293)
Net (loss) income attributable to common stockholders, basic	$ (189,555)	$ 270,230
Basic weighted average common shares	92,575,840	85,999,628
Basic (loss) earnings per weighted average common share	$ (2.05)	$ 3.14
Diluted (Loss) Earnings Per Share:		
Net (loss) income attributable to common stockholders, basic	$ (189,555)	$ 270,230
Reallocation impact of undistributed earnings to participating restricted stock units	—	83
Interest expense attributable to convertible notes	—	5,042
Net (loss) income attributable to common stockholders, diluted	$ (189,555)	$ 275,355
Basic weighted average common shares	92,575,840	85,999,628
Effect of dilutive shares issued in an assumed vesting of performance share units	—	113,373
Effect of dilutive shares issued in an assumed conversion	—	10,092,550
Diluted weighted average common shares	92,575,840	96,205,551
Diluted (loss) earnings per weighted average common share	$ (2.05)	$ 2.86

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

For the three months ended March 31, 2023, excluded from the calculation of diluted loss per share was the effect of adding undistributed earnings reallocated to 655,137 weighted average participating RSUs, as their inclusion would have been antidilutive. For the three months ended March 31, 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 three months ended March 31, 2023, PSUs were excluded from the calculation of diluted loss per share, as their inclusion would have been antidilutive. For the three months ended March 31, 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 three months ended March 31, 2023, excluded from the calculation of diluted loss per share was the effect of adding back $4.8 million of interest expense and 9,739,120 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. For the three months ended March 31, 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.

Note 20. Subsequent Events

Events subsequent to March 31, 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 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 March 31, 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 March 31, 2023, and the four immediately preceding quarters:

	Three Months Ended				
	March 31, 2023	**December 31, 2022**	**September 30, 2022**	**June 30, 2022**	**March 31, 2022**
Average portfolio yield [(1)]	5.09%	4.92%	4.61%	4.39%	3.90%
Average cost of financing [(2)]	4.57%	3.95%	2.84%	1.13%	1.01%
Net spread	0.52%	0.97%	1.77%	3.26%	2.89%

(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. Beginning with the three months ended June 30, 2022, average portfolio yield also includes the implied asset yield portion of dollar roll income on TBAs. 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 June 30, 2022, average cost of financing also includes the implied financing benefit/cost portion of dollar roll income on TBAs. TBA dollar roll income is the non-GAAP economic equivalent to holding and financing Agency RMBS using short-term repurchase 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 Corporation;
- 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 loss are significantly affected by fluctuations in market prices. At March 31, 2023, approximately 86.8% of our total assets, or $12.1 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 March 31, 2023, 23.0% 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

After beginning 2023 with two months of relative calm, the financial markets were roiled in early March by the seizure of two regional banks (Silicon Valley Bank and Signature Bank) by banking regulators, which sent tremors through the banking system. In response, interest rates on the front end of the yield curve plunged, with the 2-year Treasury yield declining by 109 basis points over a three-day period culminating in the largest one day move ever on March 13th. Just a few days prior, the 2-year yield had hit a cycle high of 5.07%, the highest level since 2007. Despite ongoing concerns about the stability of the banking system, the Federal Reserve, or the Fed, raised its benchmark rate by 25 basis points on March 22nd in a continued effort to slow down the economy and drive inflation down towards the Fed’s long-term annual target of 2%. For the quarter ended March 31, 2023, the Fed hiked rates by a total of 50 basis points, resulting in higher rates on the very front end of the yield curve though interest rates on 2-year through 10-year Treasuries net declined by about 40 basis points.

The performance of mortgage-backed securities was uneven in the quarter, as nominal and option-adjusted spreads for current coupon RMBS net widened by 5 and 19 basis points, to 133 and 49 basis points. In January, spreads tightened as volatility declined, generating the third best monthly excess return in the history of the Bloomberg U.S. Mortgage-Backed Securities Index. Some of those gains were given back in February as economic data was strong and expectations for Fed hikes increased. Spurred by the stress on the banking system and the quick reversal of interest rates, volatility spiked in March and mortgage spreads widened again, this time pushing spreads wider for the quarter and generating the second worst monthly excess return of the Bloomberg index. Thirty-year mortgage rates lagged the decline in Treasury rates, declining by only 10 basis points to finish at 6.32%. Prepayment rates marginally increased from the beginning to the end of the quarter; however, with 98% of the mortgage universe still far out of the money, mortgage rates would have to fall by hundreds of basis points to trigger a refinance wave.

Despite the extreme volatility and continued fears about banking system instability, funding in the repo market remains liquid and well-supported. Spreads on repurchase agreement financing for RMBS improved in January and February from year-end, but increased in March following the news about the failure of Silicon Valley Bank. At the end of the quarter, spreads on repurchase agreements were coming back in, with rates of SOFR plus 15 to 20 basis points with no signs of balance sheet stress.

Looking ahead for the short- to medium-term, excess supply of Agency RMBS could push spreads wider than long-term averages. In addition to organic supply, the FDIC has announced that over the coming months auctions will be held to sell the assets seized from Silicon Valley Bank and Signature Bank. These sales, most of which are lower coupon, deep discount Agency RMBS and CMO positions, total approximately $85 billion. Inclusive of these sales and the paydowns from the Fed’s portfolio, total net supply for Agency RMBS is projected to total over $500 billion for 2023. In an environment where many banks are on the sidelines, it will be up to relative value accounts like money managers, REITs and hedge funds to absorb the bulk of the supply. As such, it is reasonable to assume that spreads will be wider than long-term averages which typically include stronger bank participation. That said, at quarter end, current coupon spreads were in the 92nd percentile of long-term history on a nominal basis and the 82nd percentile on an option-adjusted basis, offering levered returns supportive of our strategy.

Prepayments on our MSR remain slow and in the event of an economic downturn, we do not believe that delinquencies will materially increase. As anticipated, attractive opportunities to add MSR did materialize in the quarter and we opportunistically increased our capital allocation to the sector. On a levered basis, with the return potential of RMBS, our combined strategy is well positioned to generate attractive long-term returns.

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

(dollars in thousands)	March 31, 2023		December 31, 2022	
Agency RMBS	$ 8,676,453	72.0 %	$ 7,668,752	71.1 %
Mortgage servicing rights	3,072,445	25.5 %	2,984,937	27.7 %
Other	300,126	2.5 %	125,158	1.2 %
Total	$ 12,049,024		$ 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. While average prepayment speeds declined from the prior quarter and remain historically slow, speeds picked up marginally between December and March, predominantly due to seasonal factors and March's abnormally high collection days. Thirty-year mortgage rates declined by 10 basis points over the quarter which should have little effect on reported speeds. Looking ahead, prepayment speeds are expected to slow modestly into the beginning of the second quarter reflecting higher driving rates in the first half of March and fewer collection days. Further into the quarter, the rally in mortgage rates plus seasonal factors could modestly increase prepayment speeds. 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 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 March 31, 2023, and the four immediately preceding quarters:

	Three Months Ended				
	March 31, 2023	December 31, 2022	September 30, 2022	June 30, 2022	March 31, 2022
Agency RMBS	5.3 %	5.9 %	9.1 %	14.2 %	17.3 %
Mortgage servicing rights	4.1 %	4.6 %	6.9 %	10.0 %	14.2 %

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:

	March 31, 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:								
4.0%	$ 535,465	$ 515,844	4.1 %	100.0 %	4.6 %	$ 540,876	$ —	40
4.5%	2,956,795	2,921,461	6.7 %	100.0 %	5.2 %	3,018,820	—	28
5.0%	2,845,992	2,862,034	5.1 %	100.0 %	5.8 %	2,900,682	—	11
≥ 5.5%	2,272,963	2,320,239	7.2 %	99.8 %	6.6 %	2,309,580	—	10
	8,611,215	8,619,578	6.2 %	99.9 %	5.7 %	8,769,958	—	18
Other P&I	7,182	7,235	3.4 %	— %	5.5 %	7,344	—	215
Interest-only	875,510	33,881	8.9 %	— %	3.8 %	42,231	(5,274)	107
Agency Derivatives	188,085	15,759	10.5 %	— %	6.7 %	19,862	—	219
Total Agency RMBS	$ 9,681,992	$ 8,676,453		99.3 %		$ 8,839,395	$ (5,274)	

	December 31, 2022							
(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:								
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%	411,899	419,956	3.9 %	98.8 %	6.5 %	424,199	—	36
	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 March 31, 2023, and the four immediately preceding quarters:

	Three Months Ended				
(in thousands)	March 31, 2023	December 31, 2022	September 30, 2022	June 30, 2022	March 31, 2022
UPB at beginning of period	$ 204,876,693	$ 206,613,560	$ 227,074,413	$ 229,415,913	$ 193,770,566
Purchases of mortgage servicing rights	11,381,496	2,677,674	4,448,870	5,720,323	45,136,996
Sales of mortgage servicing rights	(142,598)	—	(19,807,427)	—	—
Scheduled payments	(1,527,309)	(1,538,046)	(1,564,465)	(1,697,237)	(1,572,871)
Prepaid	(2,119,541)	(2,439,936)	(3,709,416)	(6,026,461)	(8,249,432)
Other changes	(24,238)	(436,559)	171,585	(338,125)	330,654
UPB at end of period	$ 212,444,503	$ 204,876,693	$ 206,613,560	$ 227,074,413	$ 229,415,913

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 March 31, 2023, we had entered into repurchase agreements with 38 counterparties, 20 of which had outstanding balances. In addition, we held short- and long-term borrowings under revolving credit facilities, long-term term notes payable and long-term unsecured convertible senior notes. As of March 31, 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 4.8:1.0.

As of March 31, 2023, we held $708.2 million in cash and cash equivalents, approximately $0.9 million of unpledged Agency securities and $7.8 million of unpledged non-Agency securities. As a result, we had an overall estimated unused borrowing capacity on our unpledged securities of approximately $5.6 million. As of March 31, 2023, we held approximately $131.7 million of unpledged MSR and $42.3 million of unpledged servicing advances. Overall, on March 31, 2023, we had $164.8 million unused committed and $441.3 million unused uncommitted borrowing capacity on MSR financing facilities, and $151.2 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, as its preferred alternative rate 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 are in process, if not complete. The majority of our material contracts that are or were indexed to USD-LIBOR have been amended to transition to an alternative benchmark, where necessary. As of March 31, 2023, only our term notes incorporate LIBOR as the referenced rate and mature after the phase-out of LIBOR. However, the related agreements have provisions in place that provide for an alternative to LIBOR upon its phase-out. Additionally, as of March 31, 2023, we held exchange-traded Eurodollar futures, whose prices move in response to LIBOR and were set to mature after the phase-out of LIBOR. In April 2023, each of our outstanding Eurodollar futures contracts with maturities after June 30, 2023 was converted into three-month SOFR futures contracts with similar characteristics. As of March 31, 2023, we had no other financing arrangements or derivative instruments that incorporate LIBOR as the referenced rate and are set to mature after the phase-out of LIBOR. Additionally, each series of our fixed-to-floating preferred stock that becomes redeemable at the time the stock begins to pay a LIBOR-based rate has existing LIBOR cessation fallback language.

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 $16.48 at March 31, 2023, a decrease from $17.72 per common share at December 31, 2022. The decline in book value for the three months ended March 31, 2023 was primarily attributable to mortgage spread widening and increased hedging costs.

Our GAAP net loss attributable to common stockholders was $189.2 million, or $2.05 per diluted weighted average share, for the three months ended March 31, 2023, as compared to GAAP net income attributable to common stockholders of $271.5 million, or $2.86 per diluted weighted average share, for the three months ended March 31, 2022.

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, 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 months ended March 31, 2023 and 2022, net unrealized gains on AFS securities recognized as other comprehensive income were $125.9 million and net unrealized losses on AFS securities recognized as other comprehensive loss were $331.8 million, respectively. This, combined with GAAP net loss attributable to common stockholders of $189.2 million and GAAP net income attributable to common stockholders of $271.5 million for the three months ended March 31, 2023 and 2022, respectively, resulted in comprehensive loss attributable to common stockholders of $63.2 million and $60.3 million for the three months ended March 31, 2023 and 2022, respectively.

The following tables present the components of our comprehensive loss for the three months ended March 31, 2023 and 2022:

(in thousands, except share data) **Income Statement Data:**	Three Months Ended March 31, 2023	Three Months Ended March 31, 2022
	(unaudited)	
Interest income:		
Available-for-sale securities	$ 97,038	$ 44,647
Other	19,555	199
Total interest income	116,593	44,846
Interest expense:		
Repurchase agreements	104,355	8,343
Revolving credit facilities	25,656	5,676
Term notes payable	7,643	3,256
Convertible senior notes	4,836	5,042
Total interest expense	142,490	22,317
Net interest (expense) income	(25,897)	22,529
Other (loss) income:		
Gain (loss) on investment securities	10,798	(52,342)
Servicing income	153,320	136,626
(Loss) gain on servicing asset	(28,079)	410,624
Loss on interest rate swap and swaption agreements	(82,154)	(38,041)
Loss on other derivative instruments	(155,771)	(101,762)
Other loss	—	(44)
Total other (loss) income	(101,886)	355,061
Expenses:		
Servicing expenses	28,366	24,704
Compensation and benefits	14,083	12,193
Other operating expenses	10,484	6,625
Total expenses	52,933	43,522
(Loss) income before income taxes	(180,716)	334,068
(Benefit from) provision for income taxes	(3,908)	48,798
Net (loss) income	(176,808)	285,270
Dividends on preferred stock	(12,365)	(13,747)
Net (loss) income attributable to common stockholders	$ (189,173)	$ 271,523
Basic (loss) earnings per weighted average common share	$ (2.05)	$ 3.14
Diluted (loss) earnings per weighted average common share	$ (2.05)	$ 2.86
Dividends declared per common share	$ 0.60	$ 0.68
Weighted average number of shares of common stock:		
Basic	92,575,840	85,999,628
Diluted	92,575,840	96,205,551

(in thousands) **Income Statement Data:**	Three Months Ended March 31,	
	2023	**2022**
	(unaudited)	
Comprehensive loss:		
Net (loss) income	$ (176,808)	$ 285,270
Other comprehensive income (loss):		
Unrealized gain (loss) on available-for-sale securities	125,931	(331,845)
Other comprehensive income (loss)	125,931	(331,845)
Comprehensive loss	(50,877)	(46,575)
Dividends on preferred stock	(12,365)	(13,747)
Comprehensive loss attributable to common stockholders	$ (63,242)	$ (60,322)

(in thousands) **Balance Sheet Data:**	**March 31, 2023**	**December 31, 2022**
	(unaudited)	
Available-for-sale securities	$ 8,960,820	$ 7,778,734
Mortgage servicing rights	$ 3,072,445	$ 2,984,937
Total assets	$ 13,940,291	$ 13,466,160
Repurchase agreements	$ 9,084,712	$ 8,603,011
Revolving credit facilities	$ 1,292,831	$ 1,118,831
Term notes payable	$ 398,326	$ 398,011
Convertible senior notes	$ 282,840	$ 282,496
Total stockholders’ equity	$ 2,245,683	$ 2,183,525

Results of Operations

The following analysis focuses on financial results during the three months ended March 31, 2023 and 2022.

Interest Income

Interest income increased from $44.8 million for the three months ended March 31, 2022 to $116.6 million for the same period in 2023 due to an increase in Agency RMBS portfolio size, lower amortization recognized on Agency RMBS due to slower prepayments, 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 $22.3 million for the three months ended March 31, 2022 to $142.5 million for the same period in 2023 due to higher borrowing balances on Agency RMBS and MSR and increases in interest rates.

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 months ended March 31, 2023 and 2022:

	Three Months Ended March 31, 2023			Three Months Ended March 31, 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	$ 8,649,865	$ 97,038	4.5 %	$ 7,313,318	$ 44,647	2.4 %
Reverse repurchase agreements	816,780	8,562	4.2 %	125,074	11	— %
Other		10,993			188	
Total interest income/net asset yield	$ 9,466,645	$ 116,593	4.9 %	$ 7,438,392	$ 44,846	2.4 %
Interest-bearing liabilities:						
Borrowings collateralized by:						
Available-for-sale securities	$ 8,181,110	$ 92,023	4.5 %	$ 7,590,560	$ 4,787	0.3 %
Agency Derivatives (2)	12,463	159	5.1 %	34,920	65	0.7 %
Mortgage servicing rights and advances (3)	1,878,322	38,895	8.3 %	1,210,160	12,423	4.1 %
U.S. Treasuries (4)	571,768	6,577	4.6 %	—	—	— %
Unsecured borrowings:						
Convertible senior notes	282,729	4,836	6.8 %	303,665	5,042	6.6 %
Total interest expense/cost of funds	$ 10,926,392	$ 142,490	5.2 %	$ 9,139,305	22,317	1.0 %
Net interest (expense) income/spread		$ (25,897)	(0.3)%		$ 22,529	1.4 %

(1) Average asset balance represents average amortized cost on AFS securities and reverse repurchase agreements.
(2) Yields on Agency Derivatives not shown as interest income is included in loss on other derivative instruments in the condensed consolidated statements of comprehensive 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 months ended March 31, 2023, as compared to the same period in 2022 was driven by the rotation of the portfolio into higher coupons combined with lower amortization as a result of slower prepayment speeds. The increase in cost of funds associated with the financing of AFS securities for the three months ended March 31, 2023, as compared to the same period in 2022, was due to rising interest rates.

The increase in yields on reverse repurchase agreements for the three months ended March 31, 2023, as compared to the same period 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 months ended March 31, 2023. We did not hold any repurchase agreements collateralized by U.S. Treasury securities during the three months ended March 31, 2022.

The increase in cost of funds associated with the financing of Agency Derivatives for the three months ended March 31, 2023, as compared to the same period 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 months ended March 31, 2023, as compared to the same period in 2022, was due to rising interest rates and an increase in the use of revolving credit facility 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 months ended March 31, 2023, as compared to the same period in 2022, was due to lower amortization of deferred debt issuance costs during the three months ended March 31, 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 months ended March 31, 2023 and 2022:

(in thousands)	Three Months Ended March 31, 2023	Three Months Ended March 31, 2022
Gross yield/stated coupon	4.9 %	4.2 %
Net (premium amortization) discount accretion	(0.4)%	(1.8)%
Net yield	4.5 %	2.4 %

Gain (Loss) On Investment Securities

The following table presents the components of gain (loss) on investment securities for the three months ended March 31, 2023 and 2022:

(in thousands)	Three Months Ended March 31, 2023	Three Months Ended March 31, 2022
Proceeds from sales	$ 1,360,742	$ 2,012,620
Amortized cost of securities sold	(1,393,484)	(2,067,471)
Total realized losses on sales	(32,742)	(54,851)
Reversal of (provision for) credit losses	142	(1,114)
Other	43,398	3,623
Gain (loss) on investment securities	$ 10,798	$ (52,342)

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 months ended March 31, 2023 and 2022:

(in thousands)	Three Months Ended March 31, 2023	Three Months Ended March 31, 2022
Servicing fee income	$ 129,237	$ 135,214
Ancillary and other fee income	369	470
Float income	23,714	942
Total	$ 153,320	$ 136,626

The increase in servicing income for the three months ended March 31, 2023, as compared to the same periods in 2022, was 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.

(Loss) Gain On Servicing Asset

The following table presents the components of (loss) gain on servicing asset for the three months ended March 31, 2023 and 2022:

	Three Months Ended March 31,	
(in thousands)	**2023**	**2022**
Changes in fair value due to changes in valuation inputs or assumptions used in the valuation model	$ 20,421	$ 524,913
Changes in fair value due to realization of cash flows (runoff)	(47,661)	(114,289)
Losses on sales	(839)	—
(Loss) gain on servicing asset	$ (28,079)	$ 410,624

The increase in loss (decrease in gain) on servicing asset for the three months ended March 31, 2023, as compared to the same period in 2022, was driven by unfavorable change in valuation assumptions used in the fair valuation of MSR and losses on sales of MSR, offset by lower portfolio runoff.

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 months ended March 31, 2023 and 2022:

	Three Months Ended March 31,	
(in thousands)	**2023**	**2022**
Net interest spread	$ 3,611	$ (741)
Early termination, agreement maturation and option expiration losses	(18,580)	(56,264)
Change in unrealized (loss) gain on interest rate swap and swaption agreements, at fair value	(67,185)	18,964
Loss on interest rate swap and swaption agreements	$ (82,154)	$ (38,041)

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 months ended March 31, 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 income (loss) or to gain (loss) on investment securities, in the case of certain AFS securities for which we have elected the fair value option.

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 months ended March 31, 2023 and 2022:

(in thousands)	Three Months Ended March 31, 2023	Three Months Ended March 31, 2022
TBAs	$ (17,164)	$ (198,836)
Futures	(140,087)	106,095
Options on futures	—	(2,066)
Inverse interest-only securities	1,480	(6,955)
Loss on other derivative instruments	$ (155,771)	$ (101,762)

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 months ended March 31, 2023 and 2022:

(dollars in thousands)	Three Months Ended March 31, 2023	Three Months Ended March 31, 2022
Servicing expenses	$ 28,366	$ 24,704
Operating expenses:		
Compensation and benefits:		
Non-cash equity compensation expenses	$ 6,052	$ 4,161
All other compensation and benefits	8,031	8,032
Total compensation and benefits	$ 14,083	$ 12,193
Other operating expenses:		
Nonrecurring expenses	$ 5,418	$ 689
All other operating expenses	5,066	5,936
Total other operating expenses	$ 10,484	$ 6,625
Annualized operating expense ratio	4.3 %	2.8 %
Annualized operating expense ratio, excluding non-cash equity compensation and other nonrecurring expenses	2.3 %	2.1 %

We incur servicing expenses generally related to the subservicing of MSR. The increase in servicing expenses during the three months ended March 31, 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 an 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 months ended March 31, 2023, as compared to the same period in 2022, was driven by higher non-cash equity compensation expenses and nonrecurring expenses, offset by lower other operating expenses.

Income Taxes

During the three months ended March 31, 2023, our TRSs recognized a benefit from income taxes of $3.9 million, which was primarily due to net losses recognized on MSR and operating expenses, offset by income from MSR servicing activity. During the three months ended March 31, 2022, our TRSs recognized a provision for income taxes of $48.8 million, which was primarily due to income from MSR servicing activity 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 $127.3 million in tranches of mortgage-backed and asset-backed P&I and interest-only non-Agency securities and $172.8 million of other 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 March 31, 2023:

	March 31, 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	$ 8,618,397	$ 158,906	$ 8,777,303	$ —	$ 32,146	$ (182,636)	$ 8,626,813	4.96 %	$ 102.05
Interest-only securities	875,510	42,232	42,232	(5,274)	1,579	(4,656)	33,881	2.01 %	$ 19.83
Total	$ 9,493,907	$ 201,138	$ 8,819,535	$ (5,274)	$ 33,725	$ (187,292)	$ 8,660,694		

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 March 31, 2023, our MSR had a fair market value of $3.1 billion.

As of March 31, 2023, our MSR portfolio included MSR on 831,028 loans with an unpaid principal balance of $212.4 billion. The following tables summarize certain characteristics of the loans underlying our MSR by gross weighted average coupon rate types and ranges at March 31, 2023:

	March 31, 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%	296,930	$ 95,563,996	2.8 %	$ 379	26	768	71.0 %	0.4 %	3.0 %	25.8
> 3.25 - 3.75%	138,942	35,922,835	3.4 %	325	41	754	74.2 %	0.8 %	4.1 %	26.3
> 3.75 - 4.25%	106,613	22,127,987	3.9 %	271	64	751	75.7 %	1.1 %	5.4 %	27.3
> 4.25 - 4.75%	59,241	10,495,538	4.4 %	248	66	736	77.4 %	2.1 %	6.4 %	26.4
> 4.75 - 5.25%	42,431	9,945,024	4.9 %	356	30	745	78.7 %	1.4 %	6.3 %	26.8
> 5.25%	49,988	13,880,786	5.8 %	383	12	745	80.6 %	0.8 %	5.6 %	30.1
	694,145	187,936,166	3.5 %	348	35	759	73.6 %	0.7 %	4.0 %	26.5
15-Year Fixed:										
≤ 2.25%	23,041	6,371,648	2.0 %	325	23	777	59.1 %	0.1 %	2.7 %	25.2
> 2.25 - 2.75%	38,540	8,549,734	2.4 %	272	27	772	58.9 %	0.2 %	3.9 %	25.9
> 2.75 - 3.25%	35,572	5,079,979	2.9 %	198	55	766	61.5 %	0.2 %	6.2 %	26.2
> 3.25 - 3.75%	20,845	2,193,445	3.4 %	156	68	757	63.9 %	0.6 %	8.2 %	26.9
> 3.75 - 4.25%	9,766	866,040	3.9 %	144	64	742	65.1 %	0.8 %	8.4 %	28.6
> 4.25%	6,521	784,838	4.8 %	225	28	741	65.6 %	0.9 %	11.1 %	32.0
	134,285	23,845,684	2.6 %	254	37	769	60.4 %	0.2 %	4.8 %	26.2
Total ARMs	2,598	662,653	3.7 %	337	57	761	69.0 %	1.1 %	12.4 %	25.5
Total	831,028	$ 212,444,503	3.4 %	$ 337	35	760	72.1 %	0.7 %	4.1 %	26.5

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.

As of March 31, 2023, only our term notes incorporate LIBOR as the referenced rate and mature after the phase-out of LIBOR. However, the related agreements have provisions in place that provide for an alternative to LIBOR upon its phase-out. We have no other financing arrangements that incorporate LIBOR as the referenced rate as of March 31, 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 March 31, 2023, borrowings under repurchase agreements, revolving credit facilities, term notes payable and convertible senior notes had the following characteristics:

(dollars in thousands)	**March 31, 2023**		
Borrowing Type	**Amount Outstanding**	**Weighted Average Borrowing Rate**	**Weighted Average Years to Maturity**
Repurchase agreements	$ 9,084,712	5.11 %	0.2
Revolving credit facilities	1,292,831	8.09 %	1.5
Term notes payable	398,326	7.65 %	1.2
Convertible senior notes (1)	282,840	6.25 %	2.8
Total	$ 11,058,709	5.58 %	0.5

(dollars in thousands)	**March 31, 2023**		
Collateral Type	**Amount Outstanding**	**Weighted Average Borrowing Rate**	**Weighted Average Haircut on Collateral Value**
Agency RMBS	$ 8,382,703	5.01 %	3.9 %
Agency Other	168,658	4.92 %	2.9 %
Non-Agency securities	70,289	6.15 %	40.0 %
Agency Derivatives	12,296	5.17 %	18.8 %
Mortgage servicing rights	1,892,307	8.04 %	31.1 %
Mortgage servicing advances	48,850	8.05 %	12.7 %
U.S. Treasuries (2)	200,766	4.68 %	— %
Other (1)	282,840	6.25 %	N/A
Total	$ 11,058,709	5.58 %	8.6 %

(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 $287.5 million.

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

As of March 31, 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 4.8:1.0. 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 March 31, 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)]
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
March 31, 2022	$ 9,139,305	$ 9,121,894	$ 9,366,946	3.5:1.0	$ 4,737,226	$ (234,971)	5.2:1.0

(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 December 31, 2022 to March 31, 2023.

(in millions, except per share amounts)	Book Value	Common Shares Outstanding	Common Book Value Per Share
Common stockholders' equity at December 31, 2022	$ 1,531.2	86.4	$ 17.72
Net loss	(176.8)		
Other comprehensive income	125.9		
Comprehensive loss	(50.9)		
Dividends on preferred stock	(12.3)		
Comprehensive loss attributable to common stockholders	(63.2)		
Dividend declarations	(58.4)		
Other	6.1	0.1	
Balance before capital transactions	1,415.7	86.5	
Issuance of common stock, net of offering costs	177.7	10.1	
Common stockholders' equity at March 31, 2023	$ 1,593.4	96.6	$ 16.48
Total preferred stock liquidation preference	652.3		
Total stockholders' equity at March 31, 2023	$ 2,245.7		

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 March 31, 2023, we held $708.2 million in cash and cash equivalents available to support our operations; $12.1 billion of AFS securities, MSR, and derivative assets held at fair value; and $11.1 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 months ended March 31, 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 4.4:1.0 to 4.8:1.0. The increase was predominantly driven by an increase in financing on Agency RMBS purchases and MSR. During the three months ended March 31, 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, increased from 6.3:1.0 to 6.5:1.0.

As of March 31, 2023, we held approximately $0.9 million of unpledged Agency securities and $7.8 million of unpledged non-Agency securities. As a result, we had an overall estimated unused borrowing capacity on unpledged securities of approximately $5.6 million. As of March 31, 2023, we held approximately $131.7 million of unpledged MSR and $42.3 million of unpledged servicing advances. Overall, on March 31, 2023, we had $164.8 million unused committed and $441.3 million unused uncommitted borrowing capacity on MSR financing facilities, and $151.2 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 three months ended March 31, 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 March 31, 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)

	March 31, 2023				
Expiration Date [1]	**Amount Outstanding**	**Unused Committed Capacity [2]**	**Unused Uncommitted Capacity**	**Total Capacity**	**Eligible Collateral**
March 31, 2025	$ 658,731	$ —	$ 241,269	$ 900,000	Mortgage servicing rights
March 17, 2025	$ 256,250	$ 93,750	$ 150,000	$ 500,000	Mortgage servicing rights [4]
June 30, 2023	$ 329,000	$ 71,000	$ —	$ 400,000	Mortgage servicing rights
December 29, 2023	$ 250,000	$ —	$ 50,000	$ 300,000	Mortgage servicing rights [3]
September 28, 2024	$ 48,850	$ 151,150	$ —	$ 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) This repurchase facility is secured by a VFN issued in connection with our securitization of MSR, which is collateralized by our MSR.
(4) The revolving period of this facility ceases on March 17, 2024, at which time the facility starts a 12-month amortization period.

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 March 31, 2023:

- Total indebtedness to tangible net worth must be less than 8.0:1.0. As of March 31, 2023, our total indebtedness to tangible net worth, as defined, was 5.1:1.0.
- Cash liquidity must be greater than $200.0 million. As of March 31, 2023, our liquidity, as defined, was $708.2 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 March 31, 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 March 31, 2023 and December 31, 2022:

(in thousands)	**March 31, 2023**	**December 31, 2022**
Available-for-sale securities, at fair value	$ 8,952,534	$ 7,426,953
Mortgage servicing rights, at fair value	2,940,717	2,958,057
Restricted cash	78,857	324,854
Due from counterparties	29,510	22,055
Derivative assets, at fair value	15,309	14,738
Other assets	57,958	67,819
U.S. Treasuries [1]	195,290	877,632
Total	$ 12,270,175	$ 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 March 31, 2023 and December 31, 2022:

(in thousands)	March 31, 2023	December 31, 2022
Within 30 days	$ 1,713,277	$ 2,691,195
30 to 59 days	1,558,518	2,160,737
60 to 89 days	1,303,639	2,536,636
90 to 119 days	2,730,387	905,443
120 to 364 days	2,107,891	509,000
One to three years	1,644,997	1,316,842
Three to five years	—	282,496
Total	$ 11,058,709	$ 10,402,349

For the three months ended March 31, 2023, our restricted and unrestricted cash balance decreased approximately $300.9 million to $825.6 million at March 31, 2023. The cash movements can be summarized by the following:

- *Cash flows from operating activities.* For the three months ended March 31, 2023, operating activities increased our cash balances by approximately $0.1 million, primarily driven by our financial results for the quarter.
- *Cash flows from investing activities*. For the three months ended March 31, 2023, investing activities decreased our cash balances by approximately $1.1 billion, primarily driven by net purchases of AFS securities and MSR and payments for termination and settlement of derivative instruments, offset by net proceeds from reverse repurchase agreements.
- *Cash flows from financing activities.* For the three months ended March 31, 2023, financing activities increased our cash balance by approximately $768.9 million, primarily driven by an increase in repurchase agreement and revolving credit facility financing as well as the issuance of common stock, offset by the payment of dividends.

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 it appears likely that LIBOR will be phased out by June 2023. We currently have agreements that are indexed to LIBOR and are monitoring related reform proposals and evaluating the related risks; however, it is not possible to predict the effects of any future initiatives to regulate, reform or change the manner of administration of LIBOR could result in adverse consequences to the rate of interest payable and receivable on, market value of and market liquidity for LIBOR-based financial instruments. 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.*, LIBOR, 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 reduce the risk of losses on the value of our investments that may result from changes in interest rates in the broader markets, improve risk-adjusted returns and, where possible, obtain a favorable spread between the yield on our assets and the cost of our financing.

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 March 31, 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 March 31, 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]:	$ 15,279	$ 7,618	$ (7,635)	$ (15,207)
% change in net interest income [1]	*9.6 %*	*4.8 %*	*(4.8)%*	*(9.6)%*
Change in value of financial position:				
Available-for-sale securities	$ 178,321	$ 92,245	$ (98,274)	$ (202,191)
As a % of common equity	*11.2 %*	*5.8 %*	*(6.2)%*	*(12.7)%*
Mortgage servicing rights [2]	$ (114,129)	$ (51,932)	$ 51,095	$ 89,355
As a % of common equity [2]	*(7.2)%*	*(3.3)%*	*3.2 %*	*5.6 %*
Derivatives, net	$ (92,343)	$ (43,510)	$ 38,795	$ 72,862
As a % of common equity	*(5.8)%*	*(2.7)%*	*2.5 %*	*4.6 %*
Reverse repurchase agreements	$ 41	$ 20	$ (20)	$ (41)
As a % of common equity	*— %*	*— %*	*— %*	*— %*
Repurchase agreements	$ (10,184)	$ (5,092)	$ 5,092	$ 10,184
As a % of common equity	*(0.6)%*	*(0.3)%*	*0.3 %*	*0.7 %*
Revolving credit facilities	$ (439)	$ (219)	$ 218	$ 436
As a % of common equity	*— %*	*— %*	*— %*	*— %*
Term notes payable	$ (144)	$ (72)	$ 72	$ 143
As a % of common equity	*— %*	*— %*	*— %*	*— %*
Convertible senior notes	$ (1,492)	$ (737)	$ 719	$ 1,437
As a % of common equity	*(0.1)%*	*(0.1)%*	*0.1 %*	*0.1 %*
Total Net Assets	$ (40,369)	$ (9,297)	$ (2,303)	$ (27,815)
As a % of total assets	*(0.3)%*	*(0.1)%*	*— %*	*(0.2)%*
As a % of common equity	*(2.5)%*	*(0.6)%*	*(0.1)%*	*(1.7)%*

(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 March 31, 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 March 31, 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 March 31, 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. As of March 31, 2023, we had repurchased an aggregate of 2,957,950 preferred shares under the program for a total cost of $51.4 million. We did not repurchase preferred shares during the three months ended March 31, 2023.

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 March 31, 2023, we had repurchased 3,043,575 common shares under the program for a total cost of $201.5 million. We did not repurchase common shares during the three months ended March 31, 2023.

Item 3. Defaults Upon Senior Securities

None.

Item 4. Mine Safety Disclosures

None.

Item 5. Other Information

None.

Item 6. Exhibits

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

Table of Contents

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 March 31, 2023, filed with the SEC on May 2, 2023, formatted in Inline XBRL: (i) the Condensed Consolidated Balance Sheets, (ii) the Condensed Consolidated Statements of Comprehensive 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:	May 2, 2023	By:	/s/ William Greenberg
			William Greenberg President and Chief Executive Officer (Principal Executive Officer)
Dated:	May 2, 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: May 2, 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: May 2, 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 March 31, 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:	May 2, 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 March 31, 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:	May 2, 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.