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CREDIT OPINION
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Update

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Federal Home Loan Banks

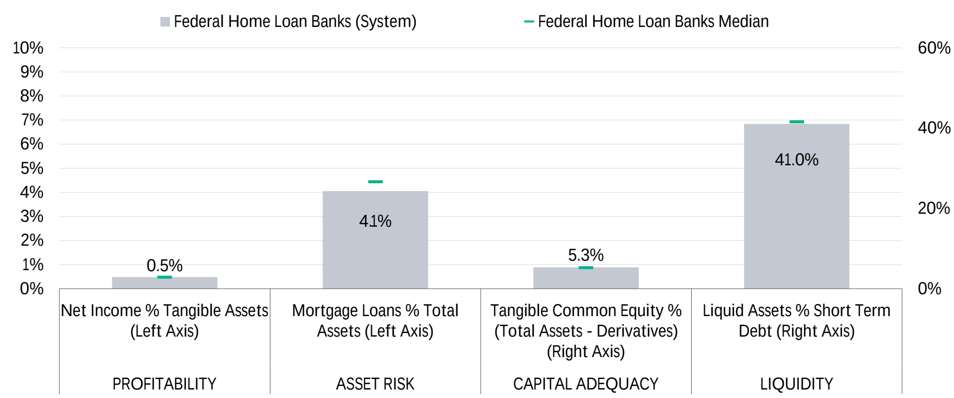
Update to credit analysis

Summary

The Federal Home Loan Banks' (System) Aaa long-term senior unsecured debt rating and Prime-1 short-term issuer rating reflect the combination of an a1 baseline credit assessment (BCA) and our very high assumption of support from the US Government (Aaa stable) due to the System's special role as a liquidity provider to US banks. As such, the ratings incorporate the System's government-sponsored enterprise (GSE) status. The a1 BCA reflects strong asset quality, stable but modest profitability, and good capitalization. The BCA considers the eleven FHLBanks' individual BCAs, ten of which are a1 (FHLBank New York's BCA is aa3), and the System's credit profile as if it were one entity. The BCA also captures the joint and several liability of all FHLBanks for the System's consolidated bonds and discount notes. As detailed on page 7, the System's regulator is currently reviewing strategic questions about its mission, with uncertain impact on its role in the financial system, and we are monitoring that review.

In the first half of 2023, System-wide advances grew 8%, but this masks a significant spike in March when many US banks scrambled for liquidity. Advances did retreat from their highs as banks turned to other funding sources, but we expect advance levels to remain elevated because banks' core deposit balances are under pressure due to monetary policy tightening.

Exhibit 1
Key Financial Ratios [1]As of June 2023



[1] All figures and ratios are adjusted using Moody's standard adjustments as of June 2023
Source: Moody's Investors Service

Credit strengths

» Joint and several liability reduces default risk of the FHLBank System's consolidated obligations

- Although narrowly focused, the FHLBanks are central liquidity providers to US banks and other members, underscoring their systemic importance
- Excellent credit quality of FHLBanks' advance portfolio, investment portfolio (excluding a small legacy private label RMBS book), and mortgage portfolio minimizes asset risk, as does the System's perfected lien priority

Credit challenges

- Reliant on confidence-sensitive market funding, but market access is strong because of consolidated issuance and FHLBank status as a GSE
- Some large single borrower concentrations at the individual FHLBank level; for the System, the top 10 advance borrowers accounted for 28% of total advances at 30 June 2023

Outlook

The stable rating outlook reflects our stable outlook on the ratings for the US government. Any rating actions on the US Government would likely result in the FHLBank System's long-term bond rating moving in lock step with any US sovereign rating action.

Factors that could lead to an upgrade

At Aaa, an upgrade of the FHLBank System's long-term debt is not possible. A higher BCA could occur if the FHLBanks' advances represented more than 70% of assets while they also maintained: 1) strong profitability, 2) a stable member risk profile, 3) continued strong asset risk, including modest asset-liability and operational risk, and 4) robust capital and liquidity.

Factors that could lead to a downgrade

Any negative rating action on the US Government would likely result in the FHLBank System's long-term senior unsecured debt rating moving in lock step with any US sovereign rating action.

Barring a downgrade of the US sovereign rating, a decline in our government support assumptions for the FHLBank System, or a material downgrade of the FHLBank System's a1 BCA, we do not expect changes to the FHLBank System's debt and issuer ratings. This is due to the fact that the ratings incorporate an expectation of a very high degree of US Government support.

Factors that could lead to a downgrade of the FHLBank System's BCA of a1 include materially higher loss expectations on the FHLBanks' mortgage holdings and/or private-label MBS portfolios, multiple quarterly net losses or significant asset-liability mismatches. In addition, an expansion of the FHLBanks' risk profile, for example due to a change in their government mandate or self-initiated, could result in lower standalone BCAs. The BCA for the FHLBank System could then be downgraded based on downgraded BCAs at individual FHLBanks.

Key indicators

Exhibit 2

Federal Home Loan Banks (Consolidated Financials) [1]

	06-23[2]	12-22[2]	12-21[2]	12-20[2]	12-19[2]	CAGR/Avg.[3]
Total Assets (USD Billion)	1,421.8	1,247.2	723.2	820.7	1,099.1	7.6[4]
Net Income / Tangible Assets (%)	0.5	0.3	0.3	0.4	0.3	0.3[5]
Liquid Assets (GSE) / Short Term Debt (%)	41.0	36.4	66.5	46.1	36.8	45.4[5]
Tangible Common Equity / (Total Assets - Derivatives) (%)	5.3	5.6	6.7	6.1	5.1	5.8[5]
Mortgage Loans / Total Assets (%)	4.1	4.5	7.7	7.7	6.6	6.1[5]

[1] All figures and ratios are adjusted using Moody's standard adjustments. [2] Basel I; US GAAP. [3] May include rounding differences because of the scale of reported amounts. [4] Compound annual growth rate (%) based on the periods for the latest accounting regime. [5] Simple average of periods for the latest accounting regime.
Sources: Moody's Investors Service and company filings

Profile

Chartered by Congress in 1932 through the Federal Home Loan Bank Act, the 11 FHLBanks are federally chartered, privately capitalized GSEs whose primary mission is to provide their roughly 6,500 member financial institutions with a reliable source of liquidity to support housing finance, community lending and asset-liability management. Each FHLBank is a separately chartered cooperative owned by its respective members, with its own board of directors, management and employees. Members primarily include banks, savings institutions, insurance companies and credit unions.

The 11 FHLBanks together with the Office of Finance, which is the fiscal agent responsible for issuing and servicing the FHLBanks' debt, make up the FHLBank system. The FHLBanks and the Office of Finance operate under the supervisory and regulatory framework of the Federal Housing Finance Agency (FHFA), which was created by Congress in the Housing and Economic Recovery Act of 2008. The FHLBanks are also registered with the Securities and Exchange Commission, which requires them to file public financial statements.

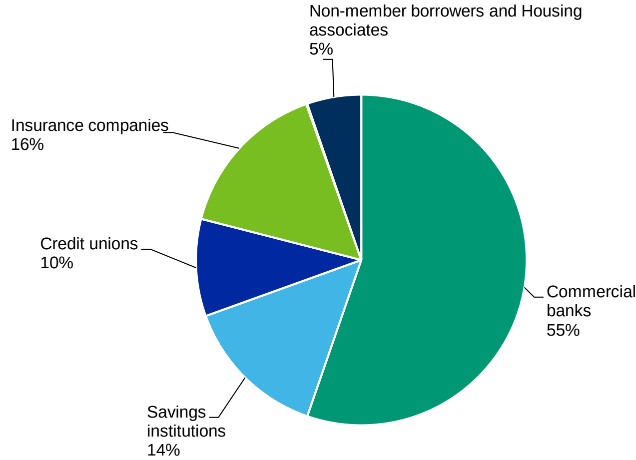
Each FHLBank serves as a financial intermediary between its members and the capital markets by issuing debt, known as consolidated obligations (bonds and discount notes), and lending those proceeds to its members, primarily in the form of secured loans, known as advances. Advances are generally short-term and over-collateralized, minimizing the credit risk on these loans. In addition, the FHLBanks benefit from their statutory lien priority with respect to certain pledged member assets. The FHLBanks also purchase mortgage loans, principally 15-30 year conventional and government-guaranteed or insured fixed-rate loans. The FHLBanks also invest in securities, principally agency MBS, subject to an investment limit of three times regulatory capital without approval by the FHFA. Some FHLBanks offer correspondent services to their member institutions, including wire transfer, security safekeeping, and settlement services.

Although each FHLBank is primarily liable for its portion of consolidated obligations, each FHLBank is also jointly and severally liable with the other FHLBanks for the payment of principal and interest on all consolidated obligations. Despite our expectation of a high likelihood of government support in a default scenario, these obligations are not obligations of the US government and are not guaranteed by either the US or any federal government agency.

As of 30 June 2023, the Federal Home Loan Banks' combined balance sheet showed $1.4 trillion in total assets and $882 billion in advances, accounting for 62% of total assets.

Exhibit 3

Banks and savings institutions, insurance companies and credit unions are the FHLBank System's primary members
Principal amount of FHLBanks advances by type of borrower, 30 June 2023



Non-members include captive insurance companies that had their memberships terminated no later than 19 February 2021.
Source: Company filings, Moody's Investors Service

Detailed rating considerations

Asset quality and credit risk management

The FHLBank System's asset quality remains exceptional. In particular, advances, which are over-collateralized, have not resulted in any losses since the System was formed in the 1930s. As of 30 June 2023, advances represented more than three-fifths of the System's total assets, with advance growth from year-end 2022 reflecting rising liquidity needs at depository members.

Most of the remainder of the System's assets are the FHLBanks' liquidity portfolios (mostly US Treasuries, fed funds sold and cash) as well as their term investment portfolios (largely agency MBS and other GSE debt). The FHLBanks also hold about $58 billion of mortgage loans, accounting for about 4% of total System assets. The System has a small legacy non-agency MBS portfolio, but it continues to shrink.

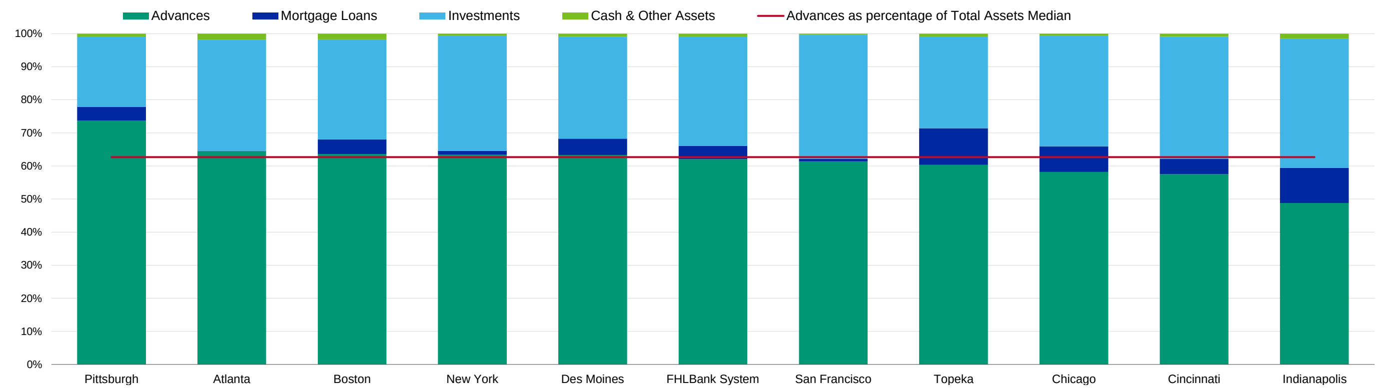
The FHLBanks' pristine credit quality track record is attributable to the over-collateralization and generally short-term nature of all advances, conservative underwriting standards and strong credit monitoring policies in which members' credit strength is actively monitored. Furthermore, the FHLBanks have strong requirements for membership, which is fundamental to their no-loss track record because it incentivizes members to maintain sufficient financial strength.

Importantly, the FHLBanks routinely obtain a perfected security interest in pledged collateral and can therefore expect to stand ahead of other creditors of failed institutions and the FDIC because of those perfected security interests. For FDIC-insured institutions, a member's failure has historically resulted in the FDIC paying off FHLBank advances in order for it to obtain collateral free of any liens held by the FHLBank, as this has been the most expeditious and least cost resolution of the failed bank or thrift. In addition, the FHLBanks do benefit to a certain degree from a statutory lien priority over 'unperfected' security interests that was established in 1987 to help ensure that they can safely make loans to members experiencing stress, but it would only be relevant in cases where no secured creditor (including a FHLBank) had perfected its security interest in the collateral through either possession of the collateral or filing a UCC-1 statement regarding the collateral. In practice, this lien priority is largely irrelevant because the FHLBanks always perfect their security interest.

We assign a high aa2 score for Asset Risk in our scorecard, as shown at the back of this report.

The exhibit below reveals that the eleven FHLBanks do have somewhat different asset mixes. In particular, advances as a percentage of total assets ranged from a high of 74% at FHLBank Pittsburgh to a low of 49% at FHLBank Indianapolis as of 30 June 2023.

Exhibit 4
Advances represent around 62% of the System's total assets, approximately the same as the regional FHLBank median



As of 30 June 2023
Source: Company Filings

With respect to collateral, each FHLBank has sole credit approval power and establishes its own underwriting standards and eligible collateral within FHFA guidelines. Eligible collateral includes current first-lien residential mortgages (overwhelmingly single-family) or securities backed by such mortgages, Federal Agency securities, FHLBank deposits and other real estate-related assets approved by the relevant FHLBank's board of directors, such as commercial real estate loans.

Investments, as noted, are primarily high quality US government and agency guaranteed securities, and they comprise much of the remainder of the banks' balance sheets. Although no FHLBank has purchased private-label mortgage-backed securities (PLMBS) since 2008 and that portfolio is significantly reduced in size, the remaining PLMBS exposures continue to present some degree of credit risk to the respective FHLBanks.

The FHLBanks' conforming mortgage portfolio programs provide members with an alternative to Fannie Mae and Freddie Mac execution. The System's mortgage portfolio represented around 4% of total assets as of 30 June 2023, compared to 6% a year earlier. The FHLBanks' mortgage assets are more susceptible to credit losses, and in particular, carry heightened operational complexity relative to the FHLBanks' core advance business. However, the mortgage portfolio program's credit risk performance has been very good to date, reflecting the quality of mortgage assets purchased and credit enhancements of the program.

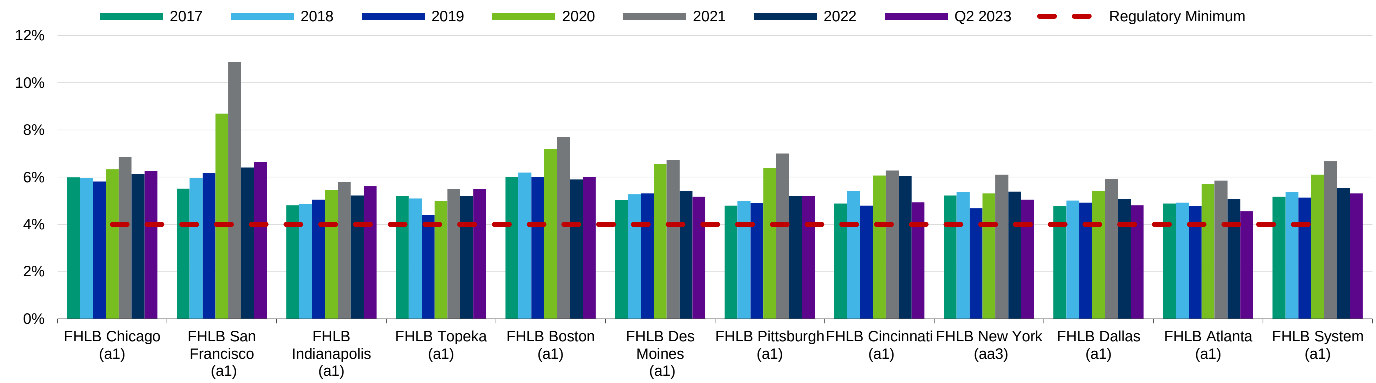
Capital adequacy

Each FHLBank is required by legislation to maintain minimum regulatory capital of 4% of its total assets. As of 30 June 2023, the capital ratio of the FHLBank System was 5.31%, down from 5.55% at year-end 2022 as the System's combined balance sheet expanded. The regulatory capital ratios of the eleven regional FHLBanks ranged from 4.56% at FHLBank Atlanta to 6.64% at FHLBank San Francisco.

Should advance growth resume in the coming quarters as we believe likely, net issuance of activity-based capital stock will maintain the System's good capital levels. This is so because when a member needs to access advances, it must not only pledge high-quality collateral, but also purchase additional activity-based stock in proportion to their borrowings. As a result, during times of high advance activity, the dollar amount of capital automatically increases. The aa1 assigned score for Capital in our scorecard incorporates our estimate of the FHLBank System's TCE ratio on a risk-weighted basis, which is very strong, principally because advances, which account for more than three-fifths of the FHLB System's assets and have not resulted in a single loss during the System's 90-year history, are a very low risk asset.

Exhibit 5

Advance growth in 2022 and 2023 has reduced capital, but it remains above regulatory requirements



FHLBanks' total regulatory capital ratio, Q4 2017 - Q2 2023

Source: Moody's Investors Service; Company Filings

Profitability

The FHLBank System's low but consistent profitability reflects the primarily low risk profile of its asset base. For the first six months of 2023, the FHLBank System's Moody's-calculated net income to tangible assets was 0.5%, slightly above its level over the past several years. The year-to-date return on average assets, a similar measure, of the eleven regional FHLBanks ranged from 0.30% at FHLBank Atlanta to 0.53% at FHLBank Pittsburgh. The FHLBank System's profitability measures are generally weaker than those of rated US commercial banks, which are closer to 1.0% on both an ROAA or net income to tangible assets basis. We assign a baa1 score for Profitability, which balances the System's low absolute level of earnings with its low earnings volatility.

Liquidity and Funding

The FHLBank System's GSE status provides it with consistent and stable access to the debt markets and informs the baa1 assigned score for Funding Structure in our scorecard. The FHLBanks' internal sources of liquidity are modest, but have strengthened as a result of regulation.

Specifically, FHFA, the regulator of the FHLBanks, implemented liquidity guidance that took full effect at year-end 2019. The FHFA established requirements for the FHLBanks' base case liquidity and added new funding gap metrics for three-month and one-year maturity horizons. In addition, the guidance addressed liquidity stress testing and contingency funding plans. We expect that all FHLBanks will remain in compliance with the updated liquidity requirements.

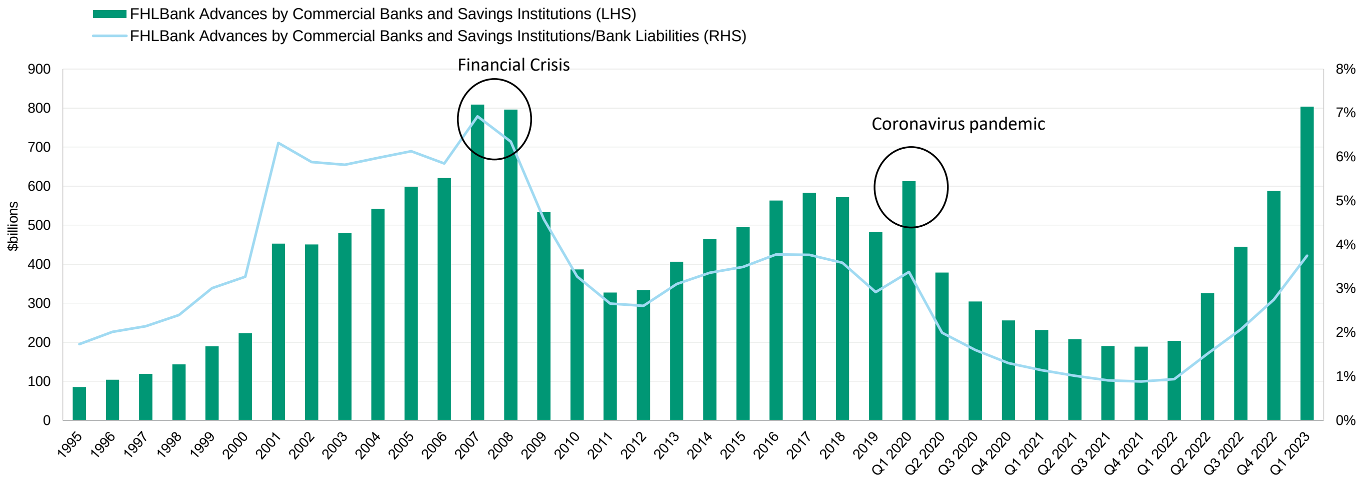
In times of severe credit market disruption, the System can be impacted, notwithstanding its GSE status. For example, in the March 2020 market disruption that resulted from the spread of the pandemic, longer-dated bond issuance was challenging as investors preferred short-term instruments. Still, the FHLBank System enjoyed market access throughout, which validated our view of its funding resilience.

Special role as a provider of liquidity to US financial institutions

As GSEs, the FHLBanks' ability to access funding throughout the cycle underpins their importance to the financial system. This is particularly true during times of extreme market disruption when they become a primary source of contingent liquidity for their members. As shown below, at the height of the global financial crisis, advances to members climbed a few hundred billion dollars for the system as a whole before receding as the financial markets and overall economy recovered. Although 2020 began with a spike in liquidity demands due to the pandemic, bank liquidity needs quickly receded, also shown in the exhibit, influenced by significant fiscal and monetary stimulus.

In 2022, FHLBank advances ramped up again as banks sought alternative funding given both declines in their deposit balances and rising unrealized losses in their AFS securities portfolios that increased their reluctance to utilize their liquidity buffers. Then, in March 2023, advances spiked dramatically as there was a scramble for liquidity in the wake of multiple regional bank failures and acute deposit outflows at select institutions. Advances have since come down from their highs, but the episode was a reminder of the FHLBank System's important role as a liquidity provider in times of stress.

Exhibit 6
FHLB advances have proven to be a reliable source of bank funding, especially during times of crisis
Systemwide advances to regulated depository members 1995 - Q1 2023



Source: FDIC

FHFA review

In the fall of 2022, the FHFA began a comprehensive review of the System that could result in proposed changes to the FHLBanks' mission, organizational structure, membership criteria and/or other areas. The review has continued in 2023 and we anticipate recommendations and/or changes will be proposed in the coming weeks or months.

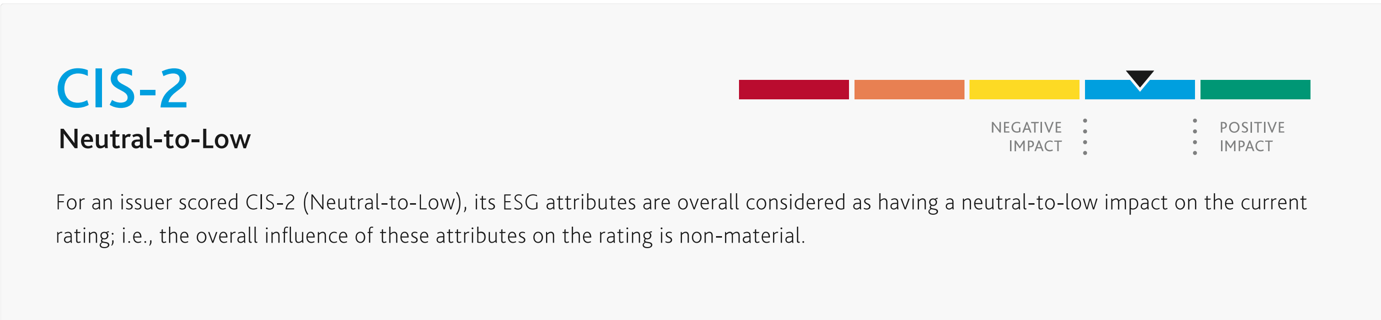
Although the FHFA's review is broad and it remains unclear what will be proposed, for creditors, expansion of FHLBank membership will be a particular area of interest. In a scenario where firms with large non-depository and non-insurance operations, such as non-bank mortgage companies, are given access to FHLBank advances, that could increase the FHLBanks' asset risk. However, any expansion of FHLBank membership to nonbank mortgage companies would require legislative authorization. Other areas of the review center on the banks' mission, organization, efficiency, role in promoting a resilient housing market, ability and effectiveness in addressing the needs of rural and vulnerable communities, and the FHLBanks' products, services and collateral requirements.

Because the FHFA's review includes an examination of the FHLBank System's mission, the late 2022 and early 2023 high-profile, multi-billion dollar increase in FHLBank advances to counter deposit runoff at many regional banks will no doubt be examined. Several of those banks failed, which has added questions about the System's membership criteria and the purpose of its advances. For example, although all of the advances were well-collateralized, as always, some of the banks in question, such as Silvergate Bank and Silicon Valley Bank, were primarily focused on banking activities other than the housing and housing finance markets. As such, we believe FHLB membership of institutions that primarily serve other sectors, such as the cryptocurrency market and venture capital market, to cite two examples, has the potential to negatively influence the FHLBank System's reputation and are likely to be under scrutiny by the FHFA and policymakers.

ESG considerations

Federal Home Loan Banks' ESG Credit Impact Score is Neutral-to-Low CIS-2

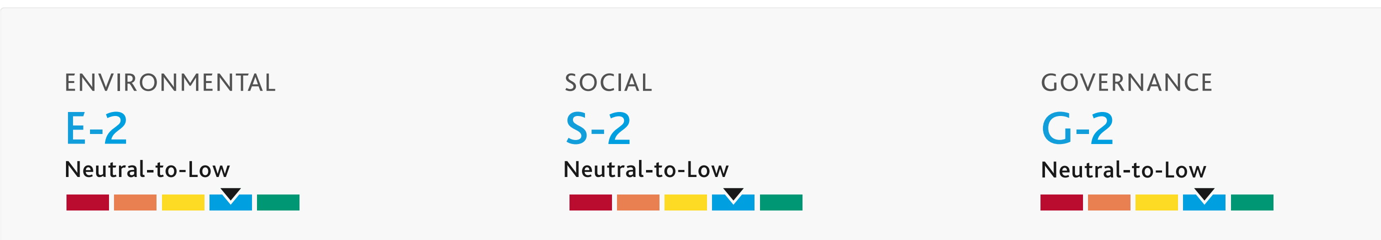
Exhibit 7
ESG Credit Impact Score



Source: Moody's Investors Service

The Federal Home Loan Bank System's **CIS-2** indicates that ESG considerations have no material impact on the current ratings.

Exhibit 8
ESG Issuer Profile Scores



Source: Moody's Investors Service

Environmental

The Federal Home Loan Bank System faces low environmental risks. Its combined loan portfolio consists of wholesale advances to banks, insurance companies and credit unions. Although most of its bank customers face moderate carbon transition risks through their own loan portfolios, and many of its insurance companies face moderate physical climate risks through their client exposures, the System is only indirectly exposed to these risks and its advance portfolio is diversified.

Social

The Federal Home Loan Bank System faces low social risks. Its clients are member institutions, such as banks, insurance companies and credit unions, and minimal interaction with retail clients mitigates the risks related to customer relations and demographic and societal trends. While the System also faces high cyber risk similar to its banking peers, it faces lower risks of customer relations fallout than a typical bank because of its institutional client base.

Governance

The Federal Home Loan Bank System faces low governance risks. None of the System's banks has ever reported credit losses on advances, their primary product, highlighting strong financial strategy and risk management. The System's strategy and asset composition is based on its Congressional mission and reinforced by its regulators. Each of the eleven FHLBanks is a separately chartered cooperative owned by its respective members, with its own board of directors, management and employees. The System's mandate, regulatory oversight and policies limit the ability of any bank's board members to act against the interest of bondholders, which mitigates the potential conflict of interest resulting from board members being executives of its borrowers.

ESG Issuer Profile Scores and Credit Impact Scores for the rated entity/transaction are available on Moodys.com. In order to view the latest scores, please click here to go to the landing page for the entity/transaction on MDC and view the ESG Scores section.

Methodology and scorecard

Our BCA scorecard is designed to capture, express and explain in summary form our Rating Committee's judgment. When read in conjunction with our research, a fulsome presentation of our judgment is expressed. As a result, the output of our BCA scorecard may materially differ from that suggested by raw data alone (though it has been calibrated to avoid the frequent need for strong divergence). The BCA scorecard output and the individual scores are discussed in rating committees and may be adjusted up or down to reflect conditions specific to each rated entity. We also assess the level of support and, consequently, the ratings uplift from the US Government (Aaa stable) using our Government-Related Issuers methodology.

Exhibit 9

Federal Home Loan Banks

Macro Factors		
Weighted Macro Profile	**Strong +**	**100%**

Factor	**Historic Ratio**	**Initial Score**	**Expected Trend**	**Assigned Score**	**Key driver #1**	**Key driver #2**
Solvency						
Asset Risk						
Problem Loans / Gross Loans	0.1%	aa1	↔	aa2	Long-run loss performance	
Capital						
Tangible Common Equity / Risk Weighted Assets (Basel I)				aa1		
Profitability						
Net Income / Tangible Assets	0.3%	ba2	↔	baa1	Earnings quality	
Combined Solvency Score				aa3		
Liquidity						
Funding Structure						
Market Funds / Tangible Banking Assets	94.0%	caa3	↔	baa1	Market funding quality	
Liquid Resources						
Liquid Banking Assets / Tangible Banking Assets	24.6%	baa1	↔	baa2	Expected trend	
Combined Liquidity Score		b1		baa1		
Financial Profile				a1		
Qualitative Adjustments				Adjustment		
Business Diversification				0		
Opacity and Complexity				0		
Corporate Behavior				0		
Total Qualitative Adjustments				0		
Sovereign or Affiliate constraint				Aaa		
BCA Scorecard-indicated Outcome - Range				aa3 - a2		
Assigned BCA				a1		
Affiliate Support notching				-		
Adjusted BCA				a1		

Balance Sheet	**in-scope (USD Million)**	**% in-scope**	**at-failure (USD Million)**	**% at-failure**
Other liabilities	1,379,162	97.0%	1,379,162	97.0%
Equity	42,655	3.0%	42,655	3.0%
Total Tangible Banking Assets	1,421,817	100.0%	1,421,817	100.0%

[1] Where dashes are shown for a particular factor (or sub-factor), the score is based on non-public information.

Source: Moody's Investors Service

Ratings

Exhibit 10

Category	Moody's Rating
FEDERAL HOME LOAN BANKS	
Outlook	Stable
Senior Unsecured	Aaa
ST Issuer Rating	P-1

Source: Moody's Investors Service

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