

Operational Risk Assessments

Berkadia Commercial Mortgage, LLC

Morningstar DBRS

January 2024

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Operational Classifications:	Commercial Mortgage Primary Servicer, Master Servicer, and Special Servicer
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Rankings:	Primary Servicer — MOR CS1 (Confirmed)
	Master Servicer — MOR CS2 (Confirmed)
	Special Servicer — MOR CS3 (Confirmed)

Trends:	Stable for All Rankings
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Rationale

DBRS, Inc. (Morningstar DBRS) confirmed its MOR CS1 commercial mortgage primary servicer ranking, MOR CS2 commercial mortgage master servicer ranking, and MOR CS3 commercial mortgage special servicer ranking for Berkadia Commercial Mortgage, LLC (Berkadia or the Company).

The primary servicer ranking recognizes Berkadia’s strong professional depth; robust training programs, which include career-path development; well-established and fully integrated offshore operations; extensive internal audit regimen that continually renders satisfactory results; diligent portfolio management practices covering a large and diverse portfolio; and efficient borrower-centric loan administration. Employee turnover rates have been relatively moderate. Aside from having an accomplished record as a servicer for commercial mortgage-backed securities (CMBS) and GSE-sponsored transactions, the Company is proficient in servicing single-family rental (SFR) loans and related securitizations, a business line that Berkadia launched in early 2020.

The excellent suite of well-integrated purchased and proprietary technology applications for primary and master servicing includes robotic and machine-learning components, a business analytics and reporting tool, and robust borrower and client portals. The nearly all cloud-based platform includes a comprehensive data security program along with sound data backup and testing practices. The Company has continued to enhance existing and deploy new applications to further boost its workflow management, controls, and reporting capabilities.

The master servicer ranking acknowledges Berkadia’s expertise and successful performance record with CMBS reporting and advancing but also considers the Company’s modest portfolio activity involving CMBS loans with subservicers. However, Berkadia’s subservicer tracking and auditing procedures continue to be sound and commensurate with its level of required oversight. Berkadia also oversees 35 correspondent servicers for insurance company clients.

The special servicer ranking considers Berkadia’s operational scale and relatively modest portfolio volume over the past few years. Nonetheless, the Company has highly experienced personnel, sound

controls, effective reporting capabilities, and a successful performance record. In addition to any CMBS loan transfers, the group handles default management for balance sheet loans and for Fannie Mae and Housing and Urban Development (HUD)-backed loans. A legacy asset management tool, in tandem with other applications, satisfactorily addresses the data management and reporting requirements.

As of June 30, 2023, Berkadia's total primary and master servicing portfolio consisted of 20,876 loans with an aggregate unpaid principal balance (UPB) of \$397.36 billion. Within this total, Berkadia was the named primary or primary/master combined servicer for 850 CMBS loans, 2,371 Fannie Mae loans, and 3,332 Freddie Mac loans, including 2,765 loans contained in Freddie Mac-sponsored securitized transactions. The Company was also the servicer on 822 securitized SFR loans. The CMBS master servicer-only portfolio contained 15 loans with a UPB of \$109.2 million involving three subservicers, of which one serviced 13 loans and the others serviced one loan each for Berkadia.

As of June 30, 2023, Berkadia was the named special servicer on 15 securitizations consisting of 386 loans with a \$5.14 billion UPB. The active portfolio contained 47 loan positions with a total \$744.4 million UPB consisting primarily of healthcare and multifamily assets. Berkadia classified approximately 74% of the loans in its active special servicing portfolio as performing. Over the past few years, the portfolio has not contained any real estate owned (REO) properties and most activity has involved HUD, GSE, and non-CMBS transactions. However, Berkadia recently added a loan collateralized by a prominent office property to its active special servicing portfolio.

Trend

The trends for the primary, master, and special servicer rankings remain Stable.

Company Profile and Business Overview

Berkadia, a commercial real estate finance company formed in August 2009, is a joint venture between Berkshire Hathaway Inc. and Jefferies Financial Group, formerly known as Leucadia National Corp. Its business lines include mortgage banking, investment sales, and loan servicing. The Company serves as a master, primary, and/or special servicer for commercial mortgage loans originated internally and through third-party production sources and is the largest nonbank commercial mortgage servicer in the U.S. As of December 31, 2022, the Mortgage Bankers Association (MBA) ranked Berkadia as the fourth-largest master/primary servicer based on dollar volume and third-largest by loan count.

Berkadia originates loans for Freddie Mac, Fannie Mae, the U.S. Department of Housing and Urban Development (HUD), insurance companies, financial institutions, conduits, its proprietary lending program, and other correspondents through its more than 60 production and investment sales offices across the U.S.

Berkadia's core primary and master servicing focus is on third-party fee for service assignments, including CMBS transactions. Other clients include government-sponsored agencies (Fannie Mae, Freddie Mac, and the Federal Housing Administration/Ginnie Mae), HUD, financial institutions, life insurance companies, and other third-party investors. It also services commercial mortgage loans held

on its balance sheet and commercial mortgage loan portfolios for other balance sheet lenders. The business model focuses on providing customized and flexible servicing solutions through its Servicer's Servicer Model as well as general primary and master servicing.

Berkadia has seven servicing locations: Ambler, Pennsylvania (administrative headquarters); New York City; Midvale, Utah; Scottsdale, Arizona; St. Louis, Missouri; Irvine, California; and India (in three cities but predominantly in Hyderabad). The special servicing team is mostly in Irvine with some personnel in Ambler. Approximately 68% of employees for servicing and back-office operations are based in India and employed through BSIPL, a wholly owned Berkadia subsidiary that manages operations at the India offices.

Financial Condition: Berkadia generates revenue principally from servicing fees, loan origination fees, loan sales, and interest income. With continual servicing portfolio growth, the Company has consistently been profitable and its balance sheet well exceeds the GSEs' net worth requirements. Resources for advancing and liquidity include a sizable unsecured credit facility and secured borrowing agreements. Overall, Berkadia demonstrates a strong commitment to servicing and invests the requisite resources.

Exhibit 1 Berkadia Servicing and Active Special Servicing Volume

	June 30, 2023		December 31, 2022		December 31, 2021		December 31, 2020	
	UPB (\$ Millions)	Loans	UPB (\$ Millions)	Loans	UPB (\$ Millions)	Loans	UPB (\$ Millions)	Loans
Primary Servicing	380,846.6	19,928	376,092.5	19,960	324,440.3	19,181	288,861.5	19,047
CMBS Master Servicing*	109.3	15	114.5	23	129.3	31	146.5	37
Other Master Servicing**	16,399.1	933	16,802.3	991	12,633.0	910	13,856.6	1,211
Total Servicing Portfolio	397,355.0	20,876	393,009.3	20,974	337,202.6	20,122	302,864.6	20,295
Loans in Special Servicing	746.9	49	2,360.9	95	3,222.1	138	4,114.9	178
Special Servicing Portfolio								
Active Loans Only	744.4	47	203.9	16	300.2	27	1,371.6	94
REO Properties Only	0.0	0	0.0	0	0.0	0	0.0	0

*Includes only loans subserviced by others.

**Berkadia's oversight of non-CMBS correspondent loan servicers for insurance company clients (35 servicers and 47 insurance company clients as of June 2023).

Operational Infrastructure

Organizational Structure

The organizational structure is a hybrid of functionally driven teams, product-specific client relations managers, who are responsible for borrower and investor contact, and subject-matter experts across the platform. For 21 years, the Company has maintained the India-based BSIPL, which now operates in three cities, to support a range of functions. Each business group is led by a senior vice president/managing director reporting to the executive vice president who also serves as president of Berkadia Commercial Real Estate Services. The special servicing team consists of a senior manager and two asset managers plus a support analyst and two asset managers for credit requests.

Exhibit 2 Organizational Chart

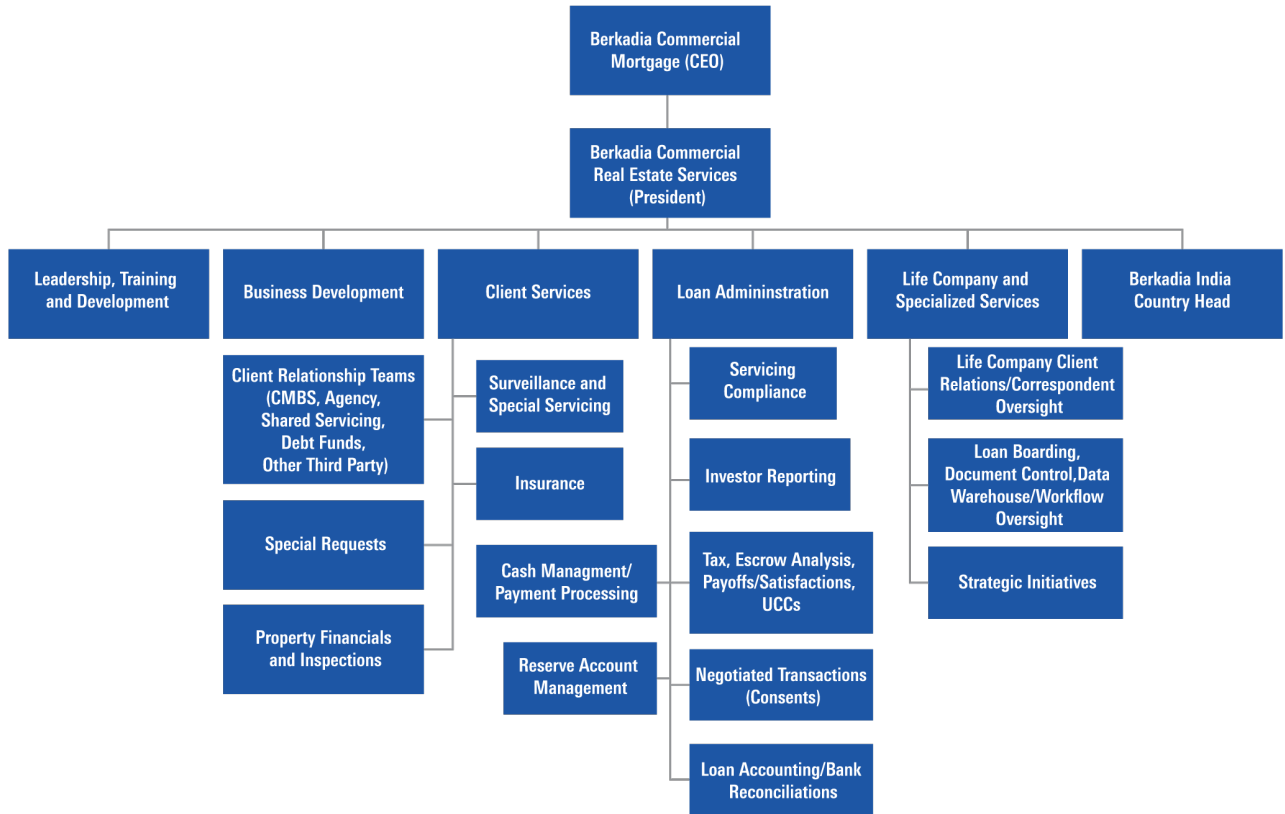
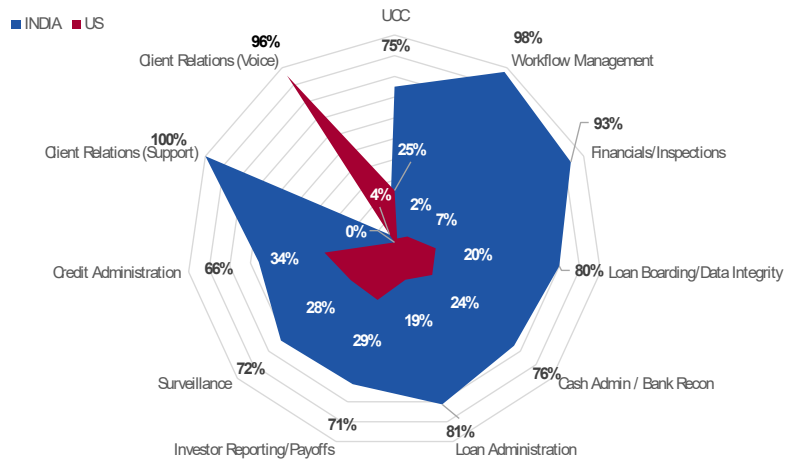


Exhibit 3 Primary and Master Servicing Functions: U.S. and Offshore Employee Allocations (June 30, 2023)*



Source: Berkadia.

Management and Staff Experience

Experience levels among portfolio management and other staff, managers, and special servicing asset managers remain high. The Company maintains a succession plan and has demonstrated its ability to promote and/or reassign personnel to fill vacated positions.

Exhibit 4 Employees' Average Years of Experience (U.S. and Offshore)*

	June 30, 2023		December 31, 2022		December 31, 2021	
	Industry	Company Tenure	Industry	Company Tenure	Industry	Company Tenure
Primary/Master Servicing						
Senior Management	32/21	20/11	33/20	24/14	33/20	23/13
Middle Management	22/17	15/171	22/17	15/14	25/16	17/11
Staff	16/4	8/4	16/4	9/4	16/5	10/5
Portfolio Management Staff Only**	27	12	27	11	23	10
Special Servicing						
Senior Management	n/a	n/a	n/a	n/a	n/a	n/a
Middle Management	25	11	22	11	32	24
Asset Managers	23	13	22	12	22	18

*U.S. employees - first number. Offshore employees - second number. No offshore staff for special servicing.

**Positions involving credit, collateral performance, and borrower request analysis. n/a = not applicable.

Management and Staff Turnover

For the 18-month period ended June 30, 2023, Berkadia experienced relative moderate employee turnover in its U.S. primary/master servicing operations. Its turnover rate for 2022 was in line with historical norms for the industry and better than that of some other servicers. Management-level turnover was minimal over the 18-month period, with no departures in 2022 for either the U.S. or offshore operations.

Given the modest size of Berkadia's special servicing team, examining turnover on a percentage basis is not meaningful. Although the Company had some departures in 2022, it had no turnover in the first half of 2023 (H1 2023), and the core team, which averages more than 10 years at Berkadia, has remained fairly constant.

Exhibit 5 Primary/Master Servicing—Employee Turnover and Hiring

	H1 2023				2022			
	U.S.		Offshore		U.S.		Offshore	
	Personnel (#)	Rate (%)	Personnel (#)	Rate (%)	Personnel (#)	Rate (%)	Personnel (#)	Rate (%)
Employees—Start of Period	235		509		203		437	
Turnover:								
Voluntary Management	1	0.4	0	0.0	0	0.0	0	0.0
Involuntary Management	1	0.4	1	0.2	0	0	0	0.0
Total Management Turnover	2	0.8	1	0.2	0	0.0	0	0.0
Voluntary Staff	10	4.3	28	5.5	23	11.3	111	25.4
Involuntary Staff	1	0.4	7	1.4	4	2.0	2	0.5
Total Staff Turnover	11	4.7	35	6.9	27	13.3	113	25.9
Total Turnover	13	5.5	36	7.1	27	13.3	113	25.9
Total Turnover Net of Internal Transfers	11	4.7	35	6.9	25	12.3	111	25.4
Management Hires	1		1		3		0	
Staff Hires	19		92		56		185	
Employees—End of Period	242		566		235		509	
Total U.S. and Offshore Employees	808				744			

Exhibit 6 Special Servicing—Employee Turnover and Hiring (All U.S. Based)

	H1 2023		2022	
	Personnel (#)	Rate (%)	Personnel (#)	Rate (%)
Employees—Start of Period	7		6	
Turnover:				
Total Management	0	0.0	1	16.7
Total Staff Turnover	0	0.0	2 (1 Involuntary)	33.3
Total Turnover	0	0.0	3	50.0
Total Turnover Net of Internal Transfers	0	0.0	2	33.3
Total New Hires	1 (Staff)		4 (1 Manager)	
Employees—End of Period	8		7	

Workload Ratios

As noted, the BSIPL employees in India work solely for Berkadia, which does not use any vendor-provided personnel to supplement its staffing.

Primary/Master Servicing

Berkadia had an 86:1 ratio of loans per U.S. employee for its primary/master servicing portfolio as of June 30, 2023, down from 89:1 as of year-end (YE) 2022. The ratio for the India-based staff was 37:1, down from 41:1 at YE2022. For the combined operations, the overall ratio was 26:1, down from 28:1 as of YE2022.

Although Berkadia's ratio for its combined operations is lower than that of some other servicers, it is in line with that of another large-volume servicer that has a sizable India-based operation. Berkadia's all-in ratio also reflects that the Company is the primary servicer for most of its managed portfolios. It also does not outsource any core servicing work and, in fact, serves in such a role for other servicers.

Special Servicing

As of June 30, 2023, Berkadia's assets-to-asset manager ratio was about 16:1 based on all loan positions and about 13:1 when consolidated by loan relationships tied to the sale real estate asset. These ratios include the team leader and two senior asset managers but exclude analyst support. As noted, most of the loans have been mainly multifamily or healthcare and Berkadia classifies many of them as performing even though they require special servicing attention. The special servicing team includes two other staffers to focus on assumptions and other borrower-initiated requests for the pools in which Berkadia has named special servicing duties.

Assessment: Berkadia's well-designed organizational structure is somewhat unique compared with most other large-volume servicers because of the scale of its offshore platform. The Company effectively leverages its economies of scale to provide specialized servicing functions for other servicers and manage its complex servicing agreement requirements. The Company demonstrates strong professional depth. Workload levels appear to be reasonable. Berkadia's relatively moderate employee turnover over the past few years, in contrast to some other servicers, reflects well on the Company's culture and ability to maintain operational stability and continuity.

Training

Berkadia uses a team approach, including leaning and development personnel at the corporate level, to manage its training activities and curriculum. The team curates a full menu of offerings scheduled throughout year, including various internally and externally sponsored sessions, and maintains an electronic resource library for employees. Aside from Berkadia-sponsored sessions, many servicing employees participate in the Mortgage Bankers Association's certification programs and courses. Employee training participation (and hours completed) is formally tracked in the Company's learning management system. Targets for yearly training hours per employee vary based on tenure and industry experience.

Exhibit 7 Berkadia Training-Hour Matrix

U.S.-Based Employees					
Company Tenure/Industry Experience	Years	0 to 3	3 to 7	8 to 15	15+
Required Minimum	Hours	50	40	25	15
Offshore-Based Employees					
Company Tenure/Industry Experience	Years	0 to 3	3 to 7	8 to 15	15+
Required Minimum	Hours	50	45	35	30

In addition to industry-focused training, Berkadia supplies significant training resources for offshore personnel, covering its servicing process groups, and provides cross-training for a range of functions. U.S.-based subject-matter experts provide live sessions (which are recorded) with case studies and provide quality assurance and guidance to offshore staff to promote career development and process improvement.

Newer training initiatives over the past year include an ambassador program to acclimate new hires and a management training program. In Q1 2024, Berkadia plans to launch a new career development program for its offshore staff as well.

Assessment: Berkadia has a well-structured and effective training function as indicated by its dedicated personnel and other resources, well-developed curriculum, and high degree of employee participation.

Audit, Compliance, and Procedural Completeness

An independent risk, compliance, and control unit manages the Company's documented policies and procedures and coordinates all auditing activities within Berkadia. It submits an annual plan to the audit committee (which reports to the board of managers) for approval. The Company tracks any material control weaknesses or significant control deficiencies, and the progress of the corresponding remediation plans, and reports them to the audit committee.

Berkadia undergoes several operational audits each year. Annual platform-wide Uniform Single Attestation Program and Regulation AB attestations have been free of exceptions year after year. The Company's latest System and Organization Controls (SOC) 1 and SOC 2 audits, both covering the period of October 1, 2022, to September 30, 2023, rendered satisfactory and unqualified opinions. Berkadia's internal audit unit conducts operational audits as well. The most recent report, issued in April 2023, contained no material exceptions.

Berkadia supplements audits with an automated daily dashboard and metrics reporting process to ensure that each group and individual analyst delivers timely and accurate work against established performance standards. Performance metrics note any exceptions related to problems with procedures or applications, which management monitors for prompt resolution. Other monitoring includes monthly cash transaction/fraud reviews and Office of Foreign Asset Control compliance checks, along with expanded staff training. Corporate-level governance and compliance encompasses a dedicated team for enterprise risk management activities to oversee data privacy and cybersecurity.

More recently, Berkadia launched an enhanced vendor management program, including a new technology application to help centralize the vetting and ongoing performance monitoring processes.

Assessment: Policies and procedures are well delineated. The audit regimen is strong based on Berkadia's allocated and dedicated resources and the independent nature, frequency, and scope of the examinations. Berkadia's self-administered compliance and performance metrics tracking processes further support its ability to meet its servicing agreement requirements with timeliness and accuracy.

Legal Liability and Corporate Insurance

The servicer reported that it has directors and officers, errors and omissions, and mortgage impairment insurance coverage as well as a separate cybersecurity policy. As a servicer or special servicer, the Company reported that it had not received notices of pooling and servicing agreement (PSA) defaults. As of this report date, Berkadia represented that it was not a defendant in any material lawsuits.

Assessment: The Company's fidelity bond and errors and omissions coverage amounts meet the insurance minimum set forth by the Fannie Mae Delegated Underwriting and Servicing seller/servicer guidelines. Based on Berkadia's representations, Morningstar DBRS is not aware of any legal proceedings that would negatively affect the servicer's operations.

Technology, Disaster Recovery, and Cybersecurity

Applications and Staffing

Berkadia has an in-house technology department of nearly 150 people to manage software and hardware, user needs, application development, data backup, and data security. The core application for loan administration is the latest version (20) of McCracken Financial Solutions' Strategy servicing system (Strategy), which the vendor hosts as an application service provider. Strategy, widely used in the commercial mortgage servicing industry, provides loan-level transaction processing and accounting for the serviced portfolio. Berkadia interfaces Strategy with its general ledger and with a data warehouse that provides customized queries and reports. In addition to Strategy, Berkadia operates with a suite of other, and mostly integrated, applications designed for specific purposes. These include the following:

- **Asset Surveillance 2.0:** This proprietary system is used to track financial statement analysis, property inspections, and rent roll analysis. The system is integrated with Strategy.
 - **CertInView:** A proprietary insurance compliance monitoring tool.
 - **Investor Query:** This system provides investors, rating agencies, and other interested parties with reports, documents, data, and general information pertaining to Berkadia's CMBS transactions.
 - **LoanView:** Berkadia's mobile-friendly borrower website, which provides access to loan-level information, related documents, electronic billing, online bill pay, and alert functionality. LoanView also allows borrowers to upload documents and set automatic payments. Connected with LoanView is LiveHelp, a chat tool.
 - **InvestorView:** This portal provides portfolio-level dashboards as well as loan- and property-level views and reporting with customizable export capabilities for third-party servicing clients.
- Investor Reporting Information System (IRIS):** Utilized to store CMBS deal-level information as well as advance tracking.
- **Be Berkadia:** The Company's intranet that houses corporate-level policies and procedures, benefits and human resources information, as well as Berkadia University, the Company's learning and development portal with links to training curricula and materials.
 - **SmartView:** A third-party tool customized by Berkadia. It combines a data warehouse and IBM Cognos Business Intelligence tools that aggregates and extracts data used for operational and management reporting, along with customized reporting.
 - **Microsoft Power BI:** Integrated with the data warehouse, Power BI provides interactive reports and dashboards from internal data sources.
 - **Enterprise Document Management (EDM)/Enterprise Productivity Management (EPM):** EDM and EPM are proprietary document-imaging and file management systems.
 - **Asset Information Management System (AIMS):** A proprietary legacy application which supports special servicing. Its user interface provides asset business plan/case creation and approval functionality. It also has a servicing agreement-driven compliance module with action alerts.

- **Mega Workflow:** This proprietary application provides workflows tracking to manage requests, track turnaround times, and provide status updates to borrowers and investors. The application includes advanced financial analysis capabilities utilizing optical character recognition, machine learning, and proprietary algorithms, and a workflow design that focuses on the security, accuracy, and transparency of money movement.

Berkadia also has installed and integrated Rabbet, a vendor-supported product for construction loan lending and servicing.

Berkadia has a tier 3 primary data center in Norristown, Pennsylvania, operated by TierPoint LLC, and an additional tier 3 data center in Philadelphia, operated by SunGard Availability Services, that serves as a hot site. Although the primary and fail over centers are not on separate power grids and are less than 25 miles from Berkadia's administrative headquarters, they both operate with high-rated power configurations and backup generators to provide a significant level of reliability.

Business recovery testing occurs every six months, and disaster recovery testing takes place annually. The most recent disaster-recovery test was successful. Berkadia replicates Strategy system data on a real-time mirrored basis to alternate servers at the Company's backup and recovery sites, and disaster-recovery capabilities enable it to restore core servicing processes within 24 hours. All employees may perform tasks remotely via a virtual private network connection. The Company provides employees with a mobile application for communication if a major business disruption happens.

One of the India offices serves as BSIPL's disaster recovery site, which eliminates dependence on a third-party vendor. Additionally, in Hyderabad, plug-and-play contracted coworking spaces are available as needed. Like the U.S.-based operations, BSIPL undergoes annual disaster recovery testing.

The technology platform has infiltration detection mechanisms and a third-party vendor performs annual penetration testing. Employee training includes recurring security awareness sessions. The enterprise risk management team also regularly reviews security alerts and trends in the industry that may lead to updated security policies. Berkadia's additional information security measures include role-based access control for network access and an increasing use of sophisticated data encryption techniques.

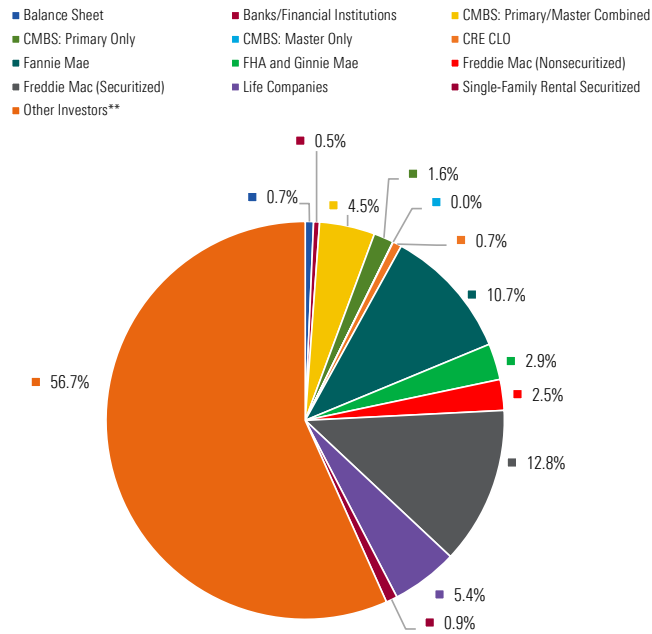
In 2023 Berkadia was ranked within the top "150 Most Cybersecure Companies" by Forbes Magazine.

Assessment: Berkadia has dedicated significant resources and demonstrates strong technology capabilities for primary and master servicing. The legacy AIMS application also acceptably supports Berkadia's needs as a named special servicer. Having backup power services for the data centers mitigates some of the proximity risk, although a greater distance would be a best practice. Satisfactory SOC 2 audits, recurring penetration tests, the data centers' certifications, and the Company's thorough data-protection and testing practices serve as a testament to the integrity of the technology platform.

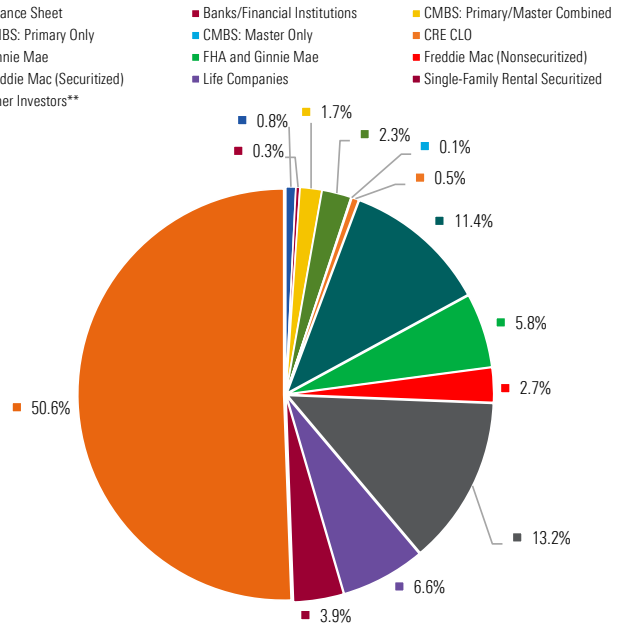
Primary and Master Servicing Administration

As of June 30, 2023, Berkadia serviced loans in every U.S. state and Washington D.C, including some loans in Puerto Rico and Guam. Among the states with the largest property concentrations were Arizona, California, Florida, Georgia, Illinois, Michigan, New Jersey, New York, Pennsylvania, Ohio, Texas and North Carolina.

Exhibit 8 Total Servicing by Investor Type (% by UPB)*



Total Servicing by Investor Type (% by Number of Loans)*



*As of June 30, 2023. Total property count: 69,275 including 28,031 SFR. **Other Investors – Included 615 CMBS loans with an approximate \$9.25 billion UPB administered through a shared servicing arrangement with another master servicer.

Exhibit 9 Total Servicing Portfolio By Property Type (June 30, 2023)

Property Type	UPB (\$ Millions)	UPB (%)	Avg. UPB (\$ Millions)	Loans	Loans (%)
Multifamily	208,175.1	52.4	18.1	11,518	55.2
Office	50,070.0	12.6	41.7	1,202	5.8
Retail	30,330.9	7.6	21.9	1,382	6.6
Industrial	33,152.8	8.3	36.7	903	4.3
Mixed Use	13,944.6	3.5	36.1	386	1.8
Lodging	11,966.7	3.0	38.0	315	1.5
Healthcare	8,399.4	2.1	18.5	453	2.2
Mobile Home Park	5,517.8	1.4	11.0	502	2.4
Self-Storage	5,682.7	1.4	20.5	277	1.3
Single-Family Rental	3,671.2	0.9	4.5	822	3.9
Warehouse	1,770.0	0.4	59.0	30	0.1
Other	17,485.0	4.4	7.0	2,502	12.0
Defeased Loans	7,188.7	1.8	12.3	584	2.8
Total	397,355.0*	100.0	19.0	20,876	100.0

* Total reflects decimal rounding.

Loan Boarding, Hedge Agreements, Letters of Credit (LOCs), and UCC Administration

During 2022, Berkadia boarded 3,521 new loans (2,239 loans in H1 2022) with an approximate aggregate UPB of \$98.0 billion. In H1 2023, it boarded another 991 new loans with an approximately aggregate UPB of \$20.55 billion. Approximately 26% of all these new loans came from Berkadia's own loan origination and production channels.

During the boarding phase, the Company creates and then centrally maintains summaries of deal-specific critical servicing and related PSA requirements. The negotiated transactions team reviews drafts of PSAs for upcoming securitizations. The team disseminates the transaction information across the servicing platform and assists with ensuring that all key PSA requirements are understood and system-captured.

For H1 2023, Berkadia averaged six business days to board new loans with data necessary to conduct payment processing and investor reporting. The loan servicing system does not have a direct interface with the Company's loan origination application. Loan boarding procedures require staff to compare system inputs with source data and include a secondary level of review. The servicing system provides exception reporting for timeliness and accuracy and issues borrower welcome letters with compliance requirements within two business days of closing. Berkadia's technology suite tracks borrower compliance items, covenant triggers, and missing documents.

As noted, Berkadia boosted its technology over the past year with added compliance controls and automation features to further strengthen its new loan boarding function.

Loan boarding procedures equally address loan modifications received from special servicers. For H1 2023, the Company reported that it averaged 24 days to board/update system records for loan modifications, which was a decrease from H1 2022 but a bit longer than the time frames reported by some other servicers.

Berkadia services loans with interest rate cap agreements and loans with LOCs as supporting collateral, which are securely stored on site or held with a custodian. It centrally tracks counterparty ratings and LOC expirations. Over the past several years, Berkadia reported that it successfully renewed all LOCs that were due to expire.

More than 80% of the servicing portfolio has UCC filings. BSIPL staff use the servicing system and a vendor's self-service portal to track the expiration dates. Through the vendor portal, Berkadia also files the continuation statements. Berkadia reported that it successfully renewed all 3,030 UCCs during the 12-month period ended June 30, 2023, that were due to expire. As a master servicer, it monitors UCC filing compliance through quarterly reports received from its subservicers.

Assessment: Berkadia's loan boarding practices are efficient and well controlled. The Company also demonstrates sound practices for monitoring interest rate cap agreements, LOCs, and UCCs.

Payment Processing

Berkadia stated that virtually all loan payments are received, deposited, and system-posted electronically, via a lockbox, wire transfer, or an automated clearing house (ACH), including subservicer remittances. As of June 30, 2023, approximately 13% of the primary servicing portfolio by loan count had floating-rates provisions, and about 5% had active cash management (hard lockboxes) agreements.

Payments are first deposited to a central clearing account and then automatically swept to investor custodial accounts, unless flagged as a suspense item. As of June 2023, approximately 70% of payments were via an ACH transfer and 21% were wire transfers. Berkadia also receives some payments via the borrower portal. Payment posting, depositing, and system balancing tasks are segregated among the staff. Using the servicing system, staff reconcile payment receipts daily for management's review. Berkadia routinely validates rate indexes, and it maintains current balances and paid-to dates of subserviced loans on its servicing systems. As of June 30, 2023, Berkadia reported no unreconciled items older than two days in its clearing account nor any non-special servicing-related suspense items older than 60 days.

Assessment: Berkadia demonstrates strong controls with a high degree of automation for payment processing as evidenced by its clear audit results and lack of aged suspense items for non-special servicing-related matters. The Company also is well experienced in administering cash-managed loans.

Real Estate Tax and Insurance Administration

As of June 30, 2023, approximately 49% of all primary serviced loans were escrowed for real estate taxes. Tax payments are generally remitted within early-pay discount periods. The servicing system tracks tax payment due dates and the payment status for all loans, whether escrowed or not. A tax service tracks and remits payments to tax authorities for escrowed loans and reports unpaid taxes on non-escrowed loans. For nonescrowed loans, Berkadia sends a system-generated delinquent tax notice to the borrower and tracks the delinquent tax until paid. As a master servicer, Berkadia reviews tax payment exception reports from subservicers quarterly. Tax payment penalty amounts have been negligible year over year, especially relative to total funds disbursed across the portfolio.

As of June 30, 2023, approximately 44% of all primary serviced loans were escrowed for insurance. Berkadia administers insurance internally with dedicated specialists but uses insurance consultants to assist with policy reviews on the front end. Berkadia tracks insurance requirements at the loan, portfolio, property, building, and policy levels via CertInView. The tool tracks compliance on a requirement level; issues letters for expiration and noncompliance; and feeds the Company's data warehouse, providing customized reporting. All insurance compliance reviews and follow-up communication with agents are performed by Berkadia staff (at both U.S. and India offices). Insurance agents and borrowers are contacted via phone and email to resolve any identified compliance issues.

The servicer automatically issues its first policy renewal reminder notices at 30 days before expiration and again at 15 days before expiration. However, for flood policies, notices are issued at 60 and 30 days ahead of expiration. Insurance-carrier ratings are reviewed before renewal for compliance. As of June

30, 2023, 44 loans were on the servicer's force-placed policy, which automatically provides for 120 days of retroactive coverage (previously it was 180 days). Force-placed coverage is through Great American Insurance Co., which has a high financial strength rating. Berkadia uses appraisals, operating statements, and other third-party reports to assess the requisite amount of forced-placed coverage. Berkadia also reviews insurance exception reports from its subservicers annually.

Assessment: Berkadia has soundly controlled and proactive tax and insurance administration. Although reduced its forced-placed policy's automatic retroactive coverage provision, it remains reasonable. As a master servicer, Berkadia follows standard industry practices in monitoring subservicers' exception reports.

Capital Expenditure Reserve Management

Portfolio managers work with account managers to review expenditure requests and release funds escrowed in capital reserve accounts. Before disbursement, management must approve all disbursement requests. Berkadia's reserve account management also involves interest reserve analysis and funding on construction and/or tenant build-out projects. Berkadia's procedures appropriately call for lien waivers and periodic inspections to verify the progress or completion of the work. As noted, in tandem with the servicing system and its proprietary workflow application, the Company recently installed specialized software to assist with draw requests and project management.

Assessment: Berkadia has sound oversight controls for capital expenditure funding requests and reserve account management with experience involving a range of property types and complex loan structures.

Investor Reporting and Accounting

Berkadia produces the most current version of the Commercial Real Estate Finance Council (CREFC) investor reporting package (IRP) for all CMBS assets. The servicing system includes an investor reporting module linked to a proprietary application to generate the CMBS investor reporting package.

Management must approve investor remittance and reporting tasks, and the Company tracks custodial banks' credit ratings for servicing agreement compliance. The Company segregates investor report preparation, investor remittance, and account reconciliation tasks. It also requires a secondary level of review and sign off for custodial account reconciliations. Employees have online access to custodial account activity, and investor reporting and custodial bank account reconciliation processes are largely automated. Berkadia balances system and bank account activity daily, with more formal reconciliations performed at month-end. As of June 30, 2023, the Company reported no unidentified items in custodial accounts older than 60 days. As a master servicer, Berkadia receives projected remittance reports from its subservicers and conducts a reconciliation to ensure remittance accuracy to the trustee.

The investor reporting group monitors the accuracy and timeliness of investor reporting data through servicing system validations. The investor reporting group also validates realized loss and appraisal reduction calculations. For the 18-month period ended June 30, 2023, Berkadia did not incur any trustee

remittance errors but did have five reporting restatements mainly because of payment application or system coding errors. It did not incur any late reporting or penalties over this period.

Assessment: Supported by its technology, Berkadia has proactive, well-controlled practices for investor accounting and reporting functions as demonstrated by its segregation of duties, clear audit results, and timely and generally error-free reporting and remitting.

CMBS Advancing and Recoverability Analysis

As a master servicer, Berkadia provides advances on CMBS transactions. It centrally tracks each loan's cumulative advances versus its current value. Berkadia has a committee that meets monthly to discuss all loans with outstanding advances and to make loan recovery assessments. The special servicer's updates to resolution strategy, timeline, and collateral value are part of these discussions and taken into consideration when assessing the advance to value ratio along with the property type and market conditions.

Exhibit 10 Berkadia Advancing Activity

	June 30, 2023	December 31, 2022	December 31, 2021	December 31, 2020	December 31, 2019
Total Advances Outstanding (\$)*	27,769,241	15,503,838	34,020,865	46,468,034	64,434,120
Total Advances Outstanding (# Loans)	115	114	50	100	104
Average Advance Per Loan (\$)	241,472	135,999	680,417	464,680	619,559
Average Aging of First P&I Advance (Days)	233	270	456	354	530
Total O/S Advances to CMBS Servicing Volume (%)**	0.2	0.1	0.4	1.9	1.9

* Principal, interest, and property protection advances.

** CMBS Servicing Volume: UPB of primary/master combined and master only.

Assessment: Berkadia has controlled advancing and recoverability determination practices. It also stated that it seeks to avoid reimbursement of advances in a manner that may cause cash flow shortfalls to investment-grade bondholders, and that it has sometimes recovered advances in monthly increments to minimize bondholder payment disruptions.

Portfolio Management and Surveillance

Financial Statement Analysis and Inspections

BSIPL largely performs the financial statement spreading and initial review function. BSIPL staff many communicate with borrowers to obtain clarifications on submitted data. However, the Company noted that only experienced U.S.-based account managers control surveillance analysis and credit-related decisions. Berkadia recently enhanced the functions of its proprietary financial statement analysis tool.

The Company's financial statement collection and analysis rates have been high year over year. As of May 31, 2023, as a primary servicer, Berkadia received and analyzed 97% of required previous year-end annual financial statements. The Company noted that, as a master servicer, it monitors subservicers' operating statement analysis reports (OSARs) for variances and overall reasonableness. A review of a subservicer's watchlist comments also may trigger a deeper review of the corresponding OSAR.

Within primary servicing, outside vendors perform most property inspections. As a practice, loan originators are not permitted to inspect properties securing loans that they originated. The Company inspects all loans greater than \$2 million annually, which is a customary requirement. The Company reported that it usually obtains more than 93% of all required inspections by or within 30 days of their due dates. The servicing system tracks and maintains inspection reports. It also tracks deferred maintenance issues and their resolution status. As a master servicer, the Company's policy is to review and validate 100% of inspections received from subservicers for completeness, and it stated that it will follow up with subservicers on inspection items.

Watchlist, Trigger Events, and Early-Stage Collections

Berkadia has nearly 20 people dedicated to surveillance, including loan covenant compliance and watchlist management. Using a proprietary application (reporting utility deal interface) Berkadia follows CREFC guidelines to track watchlist trigger events.

The Company also maintains its own risk-rating system for balance sheet loans and GSE loans with loss sharing components. It also maintains other watchlists for non-CMBS loans with criteria inclusive of any investor-established requirements. A committee reviews the status of watchlisted loans and pending actions. Berkadia subjects all subserviced loans to its watchlist criteria.

Berkadia noted that the number of loans on its CREFC watchlist report increased by about 34% between December 2022 and June 2023, largely because of office loans tripping occupancy and debt service triggers.

In addition to sending collections notices, Berkadia contacts borrowers directly based on daily delinquency reports. As a practice, it contacts borrowers one day after a missed due date and again after 10 days. The Company maintains a centralized chronology of collection efforts and borrower comments on its servicing system. Client relationship managers must review their portfolios daily based on system reports.

Assessment: Supported through its technology, Berkadia has well-experienced managers and effective practices for financial statement analysis, property inspections, monitoring loan covenants and trigger events, and watchlist management. The Company's subservicer oversight practices covering inspections, OSARs, and watchlist loans are sound and proactive. Berkadia also demonstrates high proficiency in activating springing lockboxes.

Master Servicing: Subservicer Auditing and Compliance

Berkadia has dedicated personnel for subservicer auditing and compliance oversight. As of June 30, 2023, it monitored three CMBS subservicers (15 total loans), down from five as of December 31, 2021. As of midyear 2023, two of those subservicers had only one loan each for Berkadia. As noted, the Company also oversees the work and actions of many insurance company correspondent servicers.

Berkadia monitors CMBS subservicers' timely submission of annual compliance documents in accordance with the applicable servicing agreements. This includes the collection and review of Regulation AB and Uniform Single Attestation Program (USAP) reports, collection of evidence of proper insurance, collection of financial statements, Sarbanes-Oxley certificates, and attestations required by transaction documents.

On a quarterly basis and per the transaction documents, Berkadia tracks loan boarding, CREFC reporting compliance, surveillance and portfolio monitoring, and approval validations for items such as payoffs and reserve disbursements. It also receives quarterly subservicer certifications for tax and insurance administration, reserve releases, UCC renewals, LOCs, analyzed financial statements, rent rolls, and inspections.

A scorecard tracks subservicers' compliance, including items such as remittance/reporting accuracy and timeliness, timeliness to address loan covenant breaches and triggers, and consent request processing. Because of its modest CMBS subservicer exposure, Berkadia completed one desk top review in November 2022 and completed an on-site review of the subservicer with the largest concentration of loans in Q4 2023.

Assessment: Berkadia has a solid track record of sound subservicer oversight. Its compliance monitoring practices are proactive and more than sufficient for its modest CMBS subserviced portfolio volume. Morningstar DBRS also recognizes the Company's management diligence with its life company correspondents.

Borrower Consent and Requests

Berkadia has dedicated asset management teams to underwrite and approve borrower consent requests such as assumptions, leasing reviews, property manager changes, and partial collateral releases. While U.S.-based account managers serve as the points of contact, BSIPL staff assist with this work, including a BSIPL special request team that helps with more complex requests.

Loan documents, as well as the PSAs for CMBS transactions, are reviewed to determine permissibility. The required documentation is then forwarded to the appropriate functional business unit for processing. The assigned client relations manager also monitors progress via SmartView and corresponds with borrowers. The Company has defined procedures, templates, and information checklists for each type of request, along with the expected turnaround times for completion.

Assessment: Berkadia has suitable workflow practices for managing a high volume of borrower consents. Controls for analysis and approvals are sound. Berkadia's average processing times indicate that it handles consent requests in an overall expeditious manner.

Special Servicing Administration

Berkadia, as a special servicer, is unaffiliated with controlling class holders or B-piece buyers in the CMBS transactions it may manage.

As of June 30, 2023, Berkadia's active special servicing portfolio, and related surveillance work, predominantly consisted of Fannie Mae-sponsored loans as well as some HUD-insured, third-party, and balance sheet loans. The portfolio by property types consisted of healthcare (68% by loan count) and multifamily (32% by loan count). Although the active portfolio did not contain CMBS loans, the Company liquidated a small nonreal estate secured CMBS loan earlier in 2023.

Asset Review Process

Upon the transfer of a loan to special servicing, asset managers formally notify borrowers and require them to sign pre-negotiation letters before workout discussions. Asset managers prepare loan resolution plans generally within 90 days of a loan transfer; the Company stated that such plans, or detailed asset-status reports (ASR), are required for all loans and REO assets. Asset managers submit an updated ASR or asset business plan, which includes a net present value analysis of alternative resolution strategies, to obtain approval for specific terms of negotiated resolutions.

The Company's delegations of authority require a formal committee process for the approval of initial and updated business plans. Asset managers create and update asset plans directly through AIMS, the Company's asset management system. For CMBS assets, Berkadia monitors master servicers' outstanding advances against property values and expected recovery amounts and consults with master servicers regarding their advancing decisions.

Assessment: Although its activity is modest compared with many other special servicers, Berkadia has soundly controlled and proactive asset analysis and recovery practices. Its experienced personnel and procedures also can address CMBS loans as needed. The Company is solidly experienced with and has demonstrated success in handling distressed loans for Fannie Mae and HUD.

REO Property Management

Berkadia has not had an opportunity to acquire, manage, and sell REO properties for the past few years. As of June 30, 2023, Berkadia had no REO properties in its special servicing portfolio. However, it has suitable procedures in place. Its asset management application also can track cash flows and budgets based on property managers' monthly operating statements. Berkadia requires its own standardized engagement agreement for property managers that includes a set of reporting guidelines. The Company's accounting department would set up and reconcile external property managers' operating accounts.

Assessment: Berkadia is positioned with acceptable REO management and accounting procedures.

Vendor Oversight

Berkadia maintains a centralized list of approved firms for appraisals, environmental and engineering assessments, legal counsel, property managers, and brokers. Vendors must comply with Berkadia's data security requirements as well. It also has a formal vendor performance review process. It conducts a request for a proposal bidding process for all engagements and uses its own form agreements for vendor engagements. Asset managers order appraisals and environmental reports and track pending deliverables through the asset management system. The in-house legal department engages outside counsel and uses its own standard engagement letter. Asset managers as well as in-house counsel review and approve legal invoices.

Assessment: Berkadia's process for engaging vendors and monitoring their performance to support special servicing is suitably controlled and centralized.

Asset Resolution and Recovery Performance

As noted, special servicing volume and corresponding recovery activity have been fairly modest over the past few years. Berkadia also has been able to work out loans mainly through modifications or full payoffs and thereby obviate the need to complete foreclosures and take properties back as REO.

As of June 30, 2023, the average age of the unresolved loans classified as nonperforming was about one year. Asset resolution times averaged 29 months for the 12 months ended June 30, 2023.

Exhibit 11 Berkadia Special Servicing Activity (January 2021 – June 2023)*

	H1 2023		2022		2021	
	Volume (\$ Millions)	Loans	Volume (\$ Millions)	Loans	Volume (\$ Millions)	Loans
Total Loan Portfolio at Beginning of Period	203.9	16	300.2	27	1,371.6	94
Retransferred/Redefaulted Loans	390.4	26	14.9	2	0.0	0
New Nonmonetary/Imminent Default Transfers	141.9	4	57.0	7	76.5	4
New Monetary Default Transfers	18.7	4	83.0	6	46.3	3
Total Transfers	551.0	34	154.9	15	122.8	7
Modified or Corrected Loans	(2.5)	(1)	(36.0)	(5)	(1,174.8)	(72)
Discounted Payoffs (Excludes Note Sales)	(0.7)	(1)	0.0	0	0.0	0
Full Payoffs	(6.3)	(1)	(40.4)	(4)	(8.9)	(2)
Total Loan Resolutions	(9.5)	(3)	(76.4)	(9)	(1,183.7)	(74)
CMBS Resolutions	(0.7)	(1)	0.0	0	(115.2)	(2)
Net Adjustments and/or Other Loans Transferred Out	(1.0)	0	(174.8)	(17)	0.0	0
Other Cash Recoveries	0.0	0	0.0	0	(10.5)	0
Total Loan Portfolio at End of Period	744.4	47	203.9	16	300.2	27
CMBS Portfolio at End of Period	0.0	0	0.7	1	0.7	1
Total Portfolio — Property Count at End of Period		63		21		27

*All note positions and not consolidated by common collateral or borrower relationships. No REO assets.

Assessment: Based on a review of Berkadia's resolution results, the Company demonstrates a successful performance record involving a portfolio of modest volume. Morningstar DBRS also recognizes Berkadia's diligence in resolving the surge of activity during the recent pandemic.

Investor and Master Servicer Reporting

Berkadia's special servicing reporting procedures address CMBS requirements, including the calculation of property protection advances and realized losses, pursuing updated appraisals, and communicating with other master servicers on asset management decisions. Procedures also address the specialized reporting requirements for Fannie Mae and HUD-insured loans. The special servicing components of the monthly IRP are produced and provided to master servicers in a similar manner as Berkadia's master servicing reports, with the servicing system used to identify any PSA-specific requirements. Special servicing asset managers are expected to refresh status comments at least monthly.

Assessment: Berkadia is solidly experienced and has sound special servicer-related reporting capabilities to address CMBS, GSE, and other investor-type requirements.

Ranking Scale

- MOR CS1: Superior Quality—Exceeds prudent loan servicing standards. Unlikely to be significantly vulnerable to future credit events.
- MOR CS2: Good Quality—Demonstrates proficiency in loan servicing standards. May be vulnerable to future credit events, but qualifying negative factors are considered manageable.
- MOR CS3: Adequate Quality—Demonstrates satisfactory loan servicing standards. May be vulnerable to future credit events.
- MOR CS4: Weak Quality—Demonstrates lack of compliance with one or more key areas of risk. Vulnerable to future credit events.

A servicer assigned a ranking of at least MOR CS3 is deemed to comply with what Morningstar DBRS views as the minimum prudent loan servicing standards and requirements for the servicer's operational category and role.

Disclaimer

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Note:

All figures are in U.S. dollars unless otherwise noted.

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