

# Operational Risk Assessments

## Berkadia Commercial Mortgage, LLC

July 2019

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<b>Operational Classifications:</b>	Commercial Mortgage Primary, Master, and Special Servicer
<b>Rankings:</b>	Primary Servicer: MOR CS1 (Affirmed) Master Servicer: MOR CS2 (Lowered) Special Servicer: MOR CS3 (Affirmed)
<b>Forecast:</b>	All Rankings: Stable
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### Rationale

Morningstar Credit Ratings, LLC affirmed its MOR CS1 commercial mortgage primary-servicer ranking and its MOR CS3 commercial mortgage special-servicer ranking for Berkadia Commercial Mortgage, LLC. Concurrently, Morningstar lowered Berkadia's master-servicer ranking to MOR CS2 from MOR CS1. Morningstar's rankings are based on the following factors:

#### Primary and Master Servicing

- **Technology Platform:** During 2018, Berkadia continued to focus on an aggressive and broad-reaching technology initiative to boost operating efficiency and response levels. In addition, its annual Service Organization Control 2 Type II audit verifies consistent adherence to prescribed information-technology controls.
- **Offshore Facility:** India-based Berkadia Services India Pvt. Ltd., which has been in operation for over 16 years, is the longest-serving directly owned facility in India among commercial mortgage servicers and is capable of handling complex servicing functions.
- **Workload Capacity:** Berkadia effectively monitors BSIPL staffing to offset any operational issues related to attrition. Morningstar continues to monitor Berkadia's workload ratios and attrition rates as the company leverages BSIPL staff for servicing tasks.
- **Professional Depth and Staff Experience:** Berkadia generally experiences relatively moderate employee turnover rates and exhibits high levels of industry experience among its senior management and professional staff. Senior managers average nearly 30 years of industry experience and roughly 20 years' tenure with the company.
- **Investor-Reporting Expertise:** Berkadia demonstrates proficiency with information requests and investor-reporting expertise for a range of clients. BSIPL employees also perform quality checks on investor-reporting functions to ensure accuracy.
- **Audit Program:** Berkadia's independent internal-audit function includes ongoing examinations of loan-administration and portfolio-management processes, supplemented with performance-monitoring activities embedded in the company's daily workflow practices. The latest audit results were satisfactory.

- **Insurance Administration and Monitoring of Collateral Performance:** Berkadia uses CertInView, its comprehensive insurance-tracking tool to monitor insurance coverage and administer insurance compliance. Berkadia's portfolio-management, surveillance, and special-requests teams demonstrate best practices by monitoring the watchlist for asset-level collateral performance, loan covenant compliance, and borrower requests. The special-requests team also reunderwrites certain complex requests.
- **Master-Servicing Expertise:** The revised master-servicer ranking, while considering Berkadia's investor-reporting expertise and demonstrated capabilities meeting complex requirements of commercial mortgage-backed securities transactions, reflects the company's reduced master-servicing portfolio involving loans with subservicers, a core aspect of our master-servicer assessment, and anticipated further runoff. Commensurately, Berkadia has adjusted its subservicer auditing to match the easing level of required oversight.

### Special Servicing

- **Operational Scale and Infrastructure:** The ranking reflects Berkadia's modest operational scale combined with its reduced volume of active and resolved assets during the past few years. Notwithstanding, Berkadia has an experienced senior-level asset manager and other available personnel, along with solid control practices, technology, and reporting capabilities. During 2018, Berkadia announced that its senior vice president of special servicing also would lead the newly created portfolio surveillance group formed to monitor potential asset-performance issues across the entire platform. Additionally, the special-servicing group is responsible for all default management activities associated with Berkadia's agency portfolio, which of 3,379 loans with an unpaid principal balance of \$43.11 billion as of year-end 2018.
- **Resolution Results:** Berkadia demonstrates generally favorable asset-resolution results albeit for a modest level of activity consisting of primarily smaller-balance loans. While Berkadia's operating position is sufficient for and commensurate with its lower workflow (and exposure as a special servicer), it does limit our ability to assess asset-recovery performance in absolute terms and on a comparative basis with other, higher-volume special servicers.

As of Dec. 31, 2018, Berkadia's total primary-servicing and master-servicing portfolio consisted of 18,019 loans with an aggregate UPB of \$235.88 billion. Berkadia was the primary servicer or primary/master servicer for 3,241 CMBS loans (including 1,839 loans from Freddie Mac K-Deals) and two loans that are associated with commercial real estate debt obligations, as well as the master servicer-only for another 69 CMBS loans.

At year-end 2018, Berkadia was the named special servicer on two CMBS transactions, with KeyBank, N.A. serving as the subspecial servicer in both of those transactions. Its total active special-servicing portfolio consisted of 26 loans involving 19 properties (no real estate owned assets) with a combined UPB of \$120.9 million.

### Forecast

The forecast for the primary-servicer and special-servicer rankings remains Stable. The forecast for the master-servicer ranking has been revised to Stable from Negative.

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**Table 1 – Total Primary-Servicing and Master-Servicing Portfolio by Investor/Assignment Type**

	Dec. 31, 2018		Dec. 31, 2017		Dec. 31, 2016	
	UPB (\$Mil)	Loans	UPB (\$Mil)	Loans	UPB (\$Mil)	Loans
CMBS Primary Only	5,022.2	373	4,186.9	325	3,484.0	346
CMBS Primary/Master Combined	4,979.6	956	8,931.6	1,397	15,338.7	2,240
CMBS Master Only	633.0	69	725.4	92	2,891.7	244
Freddie Mac CME/K Deals	32,808.3	1,839	27,187.4	1,547	24,178.7	1,300
Total CMBS Primary and Master	43,443.1	3,237	41,031.3	3,361	45,893.0	4,130
Fannie Mae	26,945.9	1,617	22,696.5	1,405	16,249.6	1,136
FHA/Ginnie Mae	10,274.2	1,467	9,458.7	1,488	8,766.3	1,507
Freddie Mac (nonsecuritized)	5,889.2	295	6,086.1	410	6,201.5	556
Total Agency	43,109.3	3,379	38,241.3	3,303	31,217.4	3,199
Other Third Party/Fee for Service	131,940.2	9,784	110,108.2	8,506	124,444.4	8,922
Correspondent Life Companies	14,355.7	1,466	12,987.7	1,386	11,632.7	1,379
Warehoused	2,144.1	121	1,981.0	154	1,308.9	128
Banks/Financial Institutions	851.7	30	1,522.6	57	2,514.2	91
CRE-CDO	36.2	2	39.8	2	60.5	3
Total Other Servicing	149,327.9	11,403	126,639.3	10,105	139,960.8	10,523
Total Servicing Volume	235,880.3	18,019	205,911.9	16,769	217,071.2	17,852

### 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 certain third-party production sources and is the largest nonbank commercial mortgage servicer. Berkadia originates loans for Freddie Mac, Fannie Mae, the U.S. Department of Housing and Urban Development, insurance companies, financial institutions, conduits, its proprietary lending program, and other correspondents at its 50-plus production and investment sales offices in the United States.

The company's core primary- and master-servicing focus is on third-party fee-for-service assignments including CMBS transactions. Berkadia's 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. Its fee-for-service loan portfolio represented approximately 56% of its total servicing by UPB as of Dec. 31, 2018.

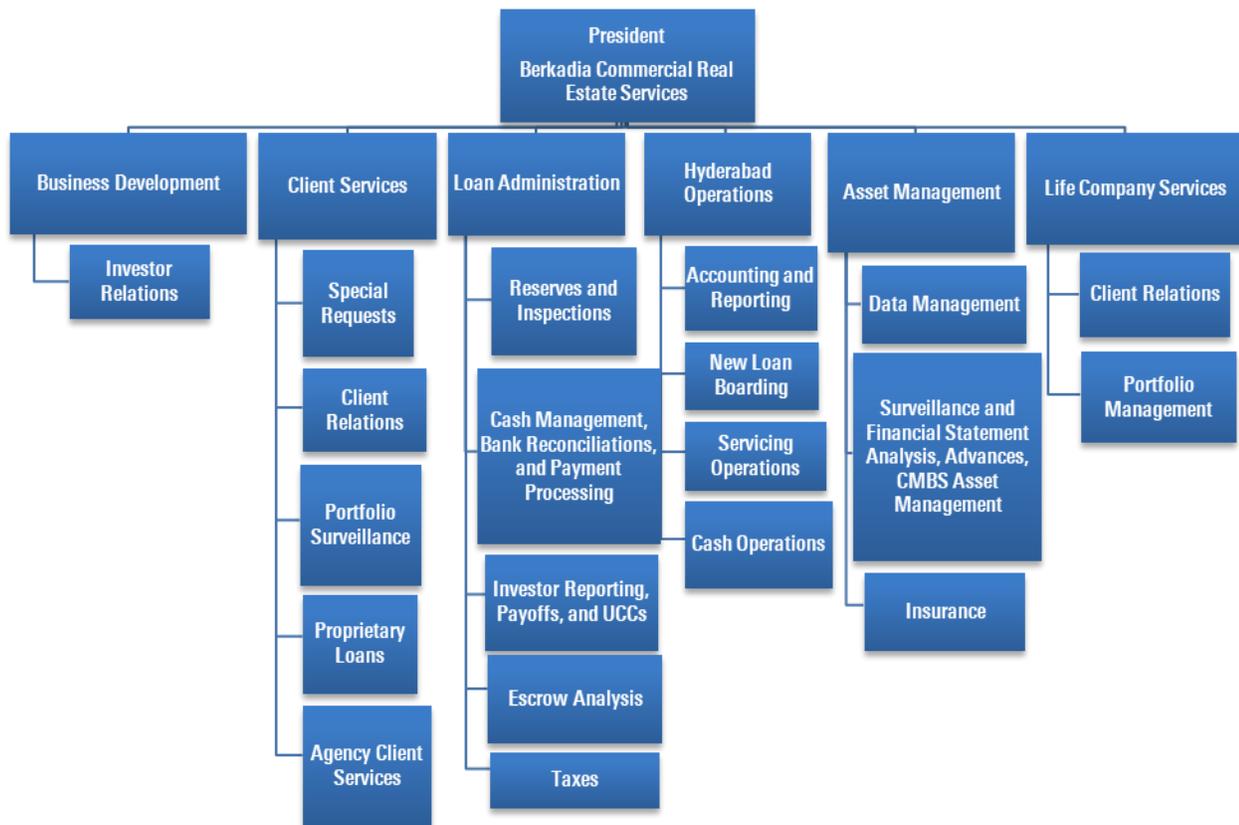
Berkadia has seven servicing locations: Ambler, Pennsylvania; New York City; Midvale, Utah; Tempe, Arizona; St. Louis; Irvine, California; and Hyderabad, India. Its special-servicing operations are in Ambler and Irvine. A substantial segment of servicing employees and back-office operations are in Hyderabad, India. BSIPL, a wholly owned subsidiary of Berkadia, manages business at this location.

**Operational Infrastructure**

**Organizational Structure**

While Berkadia is a commercial real estate services company with multiple lines of business that essentially operates as one integrated environment, the focus of this report is its loan servicing. The servicing organizational structure combines product-specific client-relations managers, who are responsible for borrower and investor contact, with subject-matter experts. The company further aligns specific tasks by product type where appropriate. For more than 16 years, the company has maintained the India-based BSIPL, which focuses on core servicing functions and provides support for borrower consents and other requests as volumes dictate. Berkadia uses vendors in the U.S. to assist with Uniform Commercial Code renewals, property inspections, and tax services. Each servicing business line group is led by a senior vice president reporting to the executive vice president who also serves as the president of Berkadia Commercial Real Estate Services.

**Chart 1 – Organizational Structure**



## Management and Staff Experience

Experience levels among professional staff, portfolio-management staff, and middle and senior management remain high.

**Table 2 – Average Years of Experience (U.S. Operation)**

	Dec. 31, 2018		Dec. 31, 2017		Dec. 31, 2016	
	Industry	Tenure at Company	Industry	Tenure at Company	Industry	Tenure at Company
<b>Primary/Master Servicing</b>						
Senior Management	30	20	32	20	31	20
Middle Management	22	17	23	15	24	15
Staff	18	13	20	13	18	12
Portfolio-Management Staff Only	16	12	16	11	19	12
<b>Special Servicing</b>						
Senior Management	N/A	N/A	N/A	N/A	N/A	N/A
Middle Management	29	21	28	20	24	17
Professional Staff	24	19	23	14	25	14
Asset Managers*	22	15	21	14	26	18

\*Two allocated positions as of Dec. 31, 2018.

## Staffing and Workload Ratios

The India-based personnel represent employees who work solely for Berkadia through its subsidiary BSIPL. As of Dec. 31, 2018, Berkadia did not use any vendor-provided personnel to supplement its staffing.

### Primary/Master Servicing

Morningstar calculated that Berkadia had a 105/1 ratio of loans per U.S. employee for its primary/master-servicing portfolio as of Dec. 31, 2018, representing a moderate increase from the 97/1 ratio at year-end 2017. When including its India-based staff, the ratio dropped to 31/1 as of Dec. 31, 2018, also up slightly from the 27/1 as of Dec. 31, 2017. In Morningstar's view, the U.S.-based staffing ratio is considerably higher compared with that of some other servicers because of the India operation. However, the overall ratio may be below the industry average.

### Special Servicing

Morningstar calculated that Berkadia's assets-to-asset manager ratio (based on two asset managers and one administrator in Irvine) was 5/1 as of Dec. 31, 2018, virtually unchanged from Dec. 31, 2017. There are two additional employees in the special-requests group who focus primarily on assumptions and borrower-initiated requests. Berkadia has had modest special-servicing activity since it transferred its legacy CMBS portfolio to KeyBank in July 2013.

As of Dec. 31, 2018, Berkadia was the named special servicer on two CMBS transactions, with 493 loans totaling \$939 million and is also responsible for any default management activities associated with its government agency portfolio of 3,377 loans. In addition, the special servicing group manages nonperforming loans held on Berkadia's balance sheet. Morningstar believes the team could absorb some additional work should market conditions change. Berkadia also has other asset management staff who could move into special-servicing roles.

During 2018, the senior vice president heading special servicing also became the leader of the newly formed portfolio surveillance group to identify potential issues across the entire platform.

### Management and Staff Turnover

For year-end 2018, the primary/master servicing turnover rate among U.S. employees was 14.0% (including five management positions) and 15% for the offshore operation. Both rates were only slightly higher than in 2017. Net of intracompany transfers, Berkadia's 2018 turnover rates were much lower. Special servicing had a 16.7% turnover rate in 2018 based on one staff departure.

**Table 3 – Primary and Master Servicing - Employee Turnover Rates**

	2018				2017			
	U.S. Personnel (#)	Rate (%)	Offshore Personnel (#)	Rate (%)	U.S. Personnel (#)	Rate (%)	Offshore Personnel (#)	Rate (%)
Employees - Beginning of Period	172		438		182		450	
Voluntary Management Departures	4	2.3	1	0.2	4	2.2	1	0.2
Involuntary Management Departures	1	0.6	0	0.0	2	1.1	0	0.0
Total Management Departures	5	2.9	1	0.2	6	3.3	1	0.2
Voluntary Staff Departures	19	11.0	48	11.0	16	8.8	30	6.6
Involuntary Staff Departures	0	0.0	17	3.9	3	1.6	34	7.6
Total Staff Departures	19	11.0	65	14.9	19	10.4	64	14.2
Total Turnover	24	14.0	66	15.1	25	13.7	65	14.4
Turnover Net of Intracompany Transfers	3	1.7	19	4.3	22	12.1	49	10.9
New Management Hires	0		0		1		0	
New Staff Hires	23		34		14		53	
Total New Hires	23		34		15		53	
Other Adjustments*	(8)		(59)		0		0	
Employees – End of Period	163		347		172		438	
Total U.S. and Offshore Employees - End of Period	510				610			

\* Mainly reflects reclassification of staff to other business areas.

**Assessment:** Berkadia’s organizational structure is unique compared with other servicers Morningstar reviews because it uses its offshore platform for its own business needs as well as for third parties. Because the offshore platform represents nearly 68% of its servicing operation headcount, the company uses economies of scale to efficiently provide specialized servicing functions for other servicers and to address complex servicing portfolio requirements.

Berkadia has had only moderate employee turnover in the past two years (no senior management turnover during 2018) and continues to benefit from a highly experienced management team and staff.

Berkadia’s workload ratios appear reasonable and reflect the company’s ability to leverage efficiencies through its BSIPL personnel. Refer to the appendix for additional information about the extent to which Berkadia uses BSIPL for tasks related to loan administration, portfolio management, and reporting functions. Within special servicing, the company has excess capacity corresponding to its much-reduced special-servicing volume as a result of the 2013 transfer of its legacy CMBS portfolio to KeyBank.

## Training

Berkadia provides formalized training activities for its servicing personnel. A corporate trainer works in conjunction with human resources and business groups in the U.S. and India to develop formal training curriculums. The servicer collaborates with external vendors, including the Harvard Business School for Leadership as well as the Mortgage Bankers Association and CRE industry program providers. Personnel can register for classes and track completed training hours via the intranet-based Berkadia University. The company requires servicing employees to complete at least 45 hours of training per year. As of Dec. 31, 2018, employees in both the U.S. and India averaged 58 hours of training (U.S. – 49 hours; India – 63 hours), which Morningstar considers comparable with other highly ranked servicers. The company has a substantial number of employees enrolled in various levels of the Mortgage Bankers Association’s Commercial Mortgage Servicer Certificate Program.

In addition to industry-focused training, Berkadia supplies significant training resources for offshore personnel, covering its servicing process groups, and provides cross training across a range of functions. Moreover, U.S.-based subject-matter experts, many of whom directly manage complex products and assets, provide live training with case studies and provide quality assurance and guidance to offshore staff for employee development and process improvement.

Berkadia continues to support its Relentless Employee Development program across the platform, which embodies the company’s commitment to continual growth and development. The program fosters a learning culture that embraces forward-looking development through feedback, coaching, and related skills. Training sessions and workshops help boost competence in these areas, with managers and work opportunities further supporting these initiatives.

Berkadia’s subscription to its digital learning library expired in April 2019, providing an opportunity to explore and assess other content providers. The company elected to subscribe to the comprehensive digital library and suite of resources available through LinkedIn Learning. All digital learning courses are available through either the LinkedIn Learning portal or MyRED, Berkadia’s learning management system. MyRED provides individual transcripts, automated training reports, and a record for all training credits.

**Assessment:** Berkadia has an effective training function based on its dedicated personnel and other resources, well-developed curriculum, and high degree of employee participation. (Please refer to the appendix for our assessment of training within BSIPL.) The actual training hours that Berkadia employees complete are high compared with many other servicers.

## 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. The servicer annually undergoes platformwide Uniform Single Attestation Program and Regulation AB attestations, which have cited no exceptions. Berkadia's most recent SOC 1 audit, which an external auditor conducted focused on a service organization's controls that are likely to be relevant to an audit of a user entity's financial statements for the period from October 2017 through September 2018, cited no exceptions. During the same period, the company also underwent a SOC 2 audit, which covers security, confidentiality, processing integrity, and availability of technology, with no exceptions. The company's internal-audit unit conducts operational audits throughout the year. The objective of the most recent internal-audit report was to identify any risk related to the reserve process. The risk assessment included a review of financial and operational information and an analysis to ascertain the effectiveness and efficiency of controls. The report assigned Berkadia an overall 2 out of 5 rating, which indicated that the company had a "satisfactory controls environment."

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. The company's transformation team is heavily involved in helping management use the dashboards, diagnose issues, and oversee operational quality.

**Assessment:** Berkadia undergoes frequent, detailed audits by external parties and by an independent internal-audit department that reports to an audit committee and ultimately to the board of managers. The servicer has significant dedicated resources and initiatives to reduce operational risks by improving processes, reducing errors, and testing security access protocols through its SOC 2 audit. Berkadia's internal-audit function is effective when considering its annual platformwide Regulation AB examination as well as its ongoing daily self-administered compliance and performance metrics tracking process.

## Legal Liability and Corporate Insurance

Berkadia noted that it or its affiliates are occasionally parties to lawsuits and other legal proceedings that, individually or in the aggregate, should not have a material adverse effect on its business or its ability to serve as a servicer. 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 defaults.

**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 is not aware of any legal proceedings that would negatively affect the servicer's operations.

## Technology, Disaster Recovery, and Cybersecurity

Berkadia uses McCracken Financial Solutions' Strategy servicing system (version 17.6) via a remote-hosted 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 the system with its general ledger and a data warehouse for specialized queries and reporting. In addition to Strategy, Berkadia operates with a variety of supplemental systems 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. It also includes an Investor Matrix module that stores details from servicing agreements pertaining to the requirements for collecting, analyzing, and distributing operating statements and inspections. The system is integrated with Strategy, leveraging the application's controls to simplify the user experience and streamline system administration.

SMARTTrack 2.0: Leveraging the integration of the Salesforce platform, a cloud-based platform for customer relationship management with McCracken and EDM, the client relations, operations, and cash teams developed and implemented processes to track tasks, process requests, and refer inquiries to other teams.

CertInView: Berkadia's proprietary insurance compliance monitoring tool, CertInView, allows insurance specialists to input and manage investor-specific insurance requirements at the loan, property, and building levels and perform detailed compliance reviews using those requirements. CertInView also automates the process of generating expiration and noncompliant letters, minimizing coverage lapses and deficiencies.

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: Now available as an Apple and Android application, Berkadia's mobile-friendly borrower website provides access to loan-level information, related documents, electronic billing, online bill pay, and alert functionality.

InvestorView: Berkadia's portal provides portfolio-level dashboards as well as loan- and property-level views and reporting with customizable export capabilities to third-party servicing clients.

Be Berkadia: An intranet-based platform, Be Berkadia provides employees with access to information about the company and its businesses, including policies and procedures, employee benefits, and other human resources-related matters, and Berkadia University, the company's in-house training and development department.

LiveHelp: This customer-service tool is designed to enhance borrower communication, allowing users to "chat" with client service representatives in real time while viewing their loan information, documents, and/or transaction histories.

SmartView: A combination of the servicing platform's data warehouse and IBM Cognos Business Intelligence tools, SmartView has over 2,000 customized operational and management reports including many scheduled reports to both internal and external users. Servicing's data warehouse contains data from Strategy, Enterprise Document Management (a document management system), and other sources to provide reporting capability, increase efficiency, and ensure data integrity. SmartView is a third-party tool that Berkadia has highly customized.

Enterprise Document Management\Enterprise Productivity Management: EPM is a proprietary document-imaging system. The system creates loan documents as images and makes them available to Berkadia staff for viewing, faxing, and printing. Internally developed corporate document management and workflow system, EDM contains the electronic loan file, servicing agreements and related documents. The EPM system is used to facilitate approval of cash transactions both within the servicing and corporate functions. These two systems are integrated

to provide a seamless user experience, using an electronic queuing system to facilitate movement of funds from requester to approvers. This electronic flow provides an audit trail for all funds moved.

Asset Information Management System: Berkadia's proprietary asset-management system, AIMS, supports Berkadia's special servicing platform. It uses an enhanced user-interface, designed around user workflows, and includes a fully integrated business plan module to create and evaluate resolution alternatives and borrower proposals. Additionally, it lets users submit cases and business plans for approval. AIMS features a PSA-driven compliance module featuring an expanded tickler system that includes specific actions and required notifications. Users are notified of pending items upon logging into the system. Management and compliance officers have access rights to view action items.

Reporting Information Management System: CMBS deal/portfolio information is used to maintain all deal-related information.

Investor Reporting Information System: Used to store CMBS investor information, IRIS is a deal-level database and advance tracking application. It stores deal information, indicators, and parameters that assist both the investor reporting and surveillance groups. Its advance module stores advance parameters, tracks loan-level advances (principal and interest and escrows) and calculates advance interest where applicable.

Mega Workflow: This in-house Berkadia application is designed for automating workflows, managing work requests, tracking turnaround times, and providing real time status updates on outstanding requests to borrowers and investors.

Berkadia's technical staff continues to pursue a broad-reaching and aggressive technology initiative to optimize operating efficiencies and create a single repository for data. The evolving automation enhancements, developed using the agile process, include advances in workflow management, portfolio surveillance, real estate market data capture and analysis, and borrower/client information exchange. The program leader is Berkadia's chief innovation officer.

Berkadia's maintains its primary data center at a Tier 3 data center in Norristown, Pennsylvania, TierPoint, LLC. An additional Tier 3 data center located in Philadelphia and operated by SunGard Availability Services provides a hot site. Although the centers are not on separate power grids and are less than 25 miles from Berkadia's Ambler headquarters, they both operate with 2N power configurations and N+1 backup generators to provide a significant level of reliability.

Business-recovery testing occurs every six months, and disaster-recovery testing takes place annually. The last off-site business recovery test, which included a full test of Berkadia's work-from-home environment, was successfully completed in June 2019, and the last disaster-recovery test was successfully completed in December 2018. 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. Certain employees also have laptops, so they may perform tasks remotely. The company provides employees with a mobile application for communication if a major business disruption happens.

An additional office in Pune, India, serves as BSIPL's disaster-recovery site. The hot site has 105 dedicated seats and 26 laptop stations with a maximum of 131 seats per shift, eliminating dependence on a third-party vendor. In Hyderabad, Berkadia has established supplemental capacity for 25 people at a local hotel with a separate power source. BSIPL undergoes annual disaster-recovery testing, as referenced in the appendix.

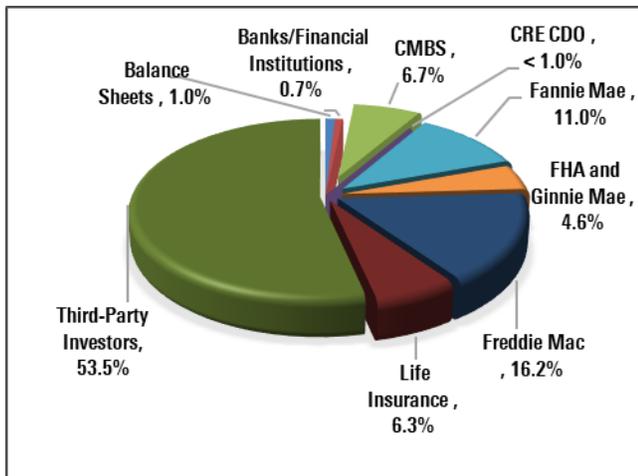
Infiltration detection mechanisms are arranged to continually scrutinize Berkadia's network, and a third-party vendor also performs annual penetration testing. Prevention against phishing attempts is a priority, and employee education programs are held to highlight security awareness. Separately, Berkadia's comprehensive information security program committee meets regularly to review current industry

information security policies, review trends, and make recommendations to the company’s management committee concerning security policies that may require updates or modification. In addition, the CISP committee has implemented data loss prevention technology that identifies, captures, and reports inappropriate transmission of sensitive data.

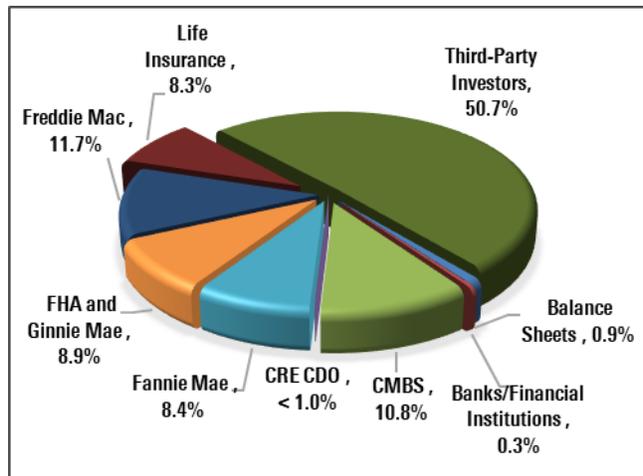
**Assessment:** Berkadia has dedicated significant resources for its technology platform. Its servicing system and various supplementary system components also benefit from ongoing development and maintenance efforts. Berkadia’s IT platform provides for proactive loan- and portfolio-level management. In addition, AIMS acceptably supports special-servicer asset tracking, analysis, and reporting to address CMBS and other investor requirements. Having backup power services for the data centers mitigates some of the proximity risk, although a greater distance would be preferable.

**Primary- and Master-Servicing Portfolio Administration**

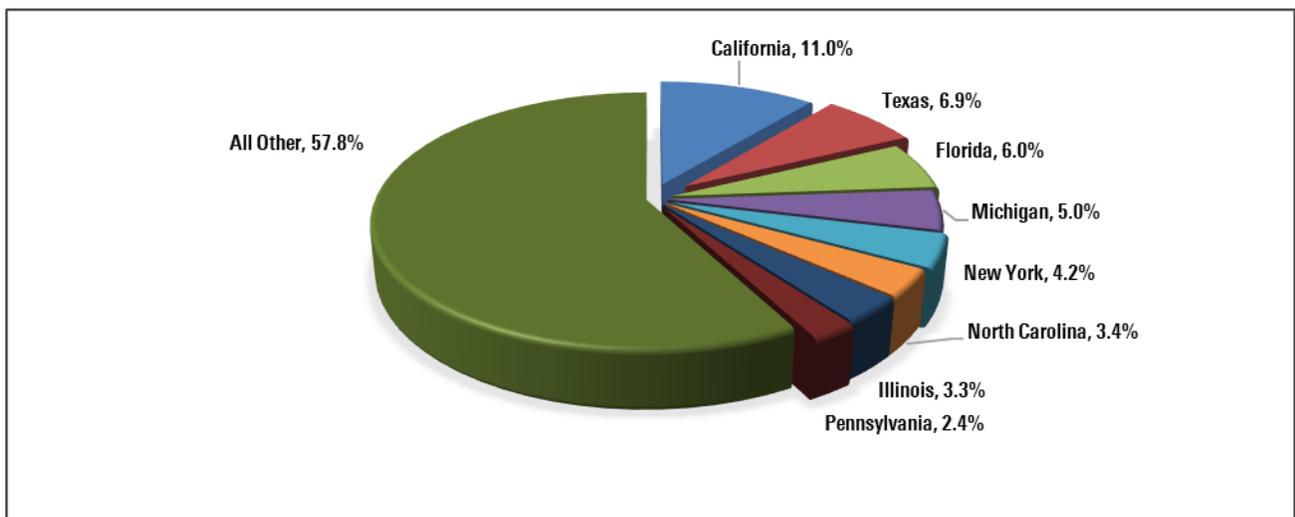
**Chart 2 – Total Servicing by Investor Type (UPB)\***



**Chart 3 – Total Servicing by Investor Type (# of Loans)\***



**Chart 4 – Total Servicing by State (# of Properties)\***



**Table 4 – Total Primary- and Master-Servicing Volume Percentages by Property Type\***

Property Type	UPB (\$Mil)	% (UPB)	Loans	% Loans	Average Size (\$Mil)
Multifamily	113,666.0	48.2	8,052	44.7	14.1
Office	30,247.2	12.8	788	4.4	38.4
Retail	28,814.7	12.2	1,538	8.5	18.7
Defeased Loans	18,243.9	7.7	2,977	16.5	6.1
Industrial	9,065.8	3.8	487	2.7	18.6
Healthcare	7,108.9	3.0	535	3.0	13.3
Lodging	6,952.7	2.9	207	1.1	33.6
Mixed Use	6,443.3	2.7	272	1.5	23.7
Mobile Home Park	3,616.2	1.5	260	1.4	13.9
Self Storage	1,790.3	0.8	209	1.2	8.6
Land	469.6	0.2	11	0.1	42.7
Other	9,461.5	4.0	2,683	14.9	3.5
Total	235,880.1	100.0	18,019	100.0	13.1

\*As of Dec. 31, 2018.

### Loan Boarding, Hedge Agreements, Letters of Credit, and UCC

During 2018, Berkadia boarded \$58.00 billion of new loan balances, consisting of 3,791 primary (or primary/master combined) serviced loans. No master-serviced-only loans were boarded during the year. Approximately 41% of all new loans boarded in 2018 came from Berkadia's own loan-origination and production channels.

In 2018, Berkadia averaged six days to board new loans with data necessary to conduct payment processing and investor reporting. During the boarding phase, the company creates and then centrally maintains summaries of deal-specific critical servicing and related PSA requirements. The company's loan-origination application is not interfaced with its servicing system. 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 days of closing. It also tracks borrower compliance items, covenant triggers, and missing documents, although some supplemental applications also support these tasks. Berkadia reported that as of year-end 2018, no new loans boarded during the year had incomplete or missing file documentation.

### Loan Modification Reboarding Activity

The servicer's practices address the reboarding of loan modifications received from external special servicers. The servicer reported that, at an average of 18 days, modification boarding times increased over the course of 2018 from an average of 12 days in 2017.

Berkadia services loans with interest-rate-cap agreements as well. It also services loans with letters of credit as supporting collateral, which are stored on site in a fire-proof safe. It centrally tracks counterparty ratings and LOC expirations. It reported that all 144 LOCs expiring during 2018 were successfully renewed. BSIPL staff use the servicing system to track UCC filing expiration dates, and Berkadia uses a third-party vendor to

file and track UCC continuation statements. Berkadia reported no lapsed UCCs occurred during 2018, and, as a master servicer, it monitors UCC filing compliance through quarterly reports that its subservicers submit.

**Assessment:** Berkadia’s loan-boarding practices are efficient and controlled. The company’s stated practice of boarding new loans within 10 days of closing and averaging six days is consistent with industry best practices. However, the servicer’s stated average time frames to set up loan modifications seem lengthy compared with some other servicers. Berkadia has sound practices for hedge agreements, LOCs, and UCC filings.

## Payment Processing

Berkadia stated that, as of Dec. 31, 2018, it received, deposited, and system posted electronically (via a lockbox, wire, or an automated clearing house) nearly 100% of loan payments, including subservicer remittances. Payments are first deposited to a central clearing account and then automatically swept to investor custodial accounts, unless flagged as a suspense item. The lockbox interfaces with the servicing system. Payment posting, depositing, and system balancing tasks are segregated among the staff. The servicing system reconciles 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 Dec. 31, 2018, Berkadia did not report any unreconciled items older than two days in its clearing account or any non-special-servicing-related suspense items older than 60 days. As of Dec. 31, 2018, the servicer held 52 loan payments in suspense (\$50.8 million) in connection with specially serviced loans pending directions or resolution from the corresponding external special servicers. This compares with 664 suspense items (approximately \$175.9 million) associated with specially serviced loans as of year-end 2017. We recognize that special-servicer-related suspense balances are not in the direct control of a primary servicer to resolve.

**Table 5 – Primary-Servicing Floating-Rate and Cash-Managed Loans**

	<u>Dec. 31, 2018</u>		<u>Dec. 31, 2017</u>		<u>Dec. 31, 2016</u>	
	UPB (\$Mil)	Loans (#)	UPB (\$Mil)	Loans (#)	UPB (\$Mil)	Loans (#)
Floating-Rate Loans	33,421.9	2,233	34,721.5	2,452	33,033.4	2,603
Component of Primary Servicing (%)	14.2	12.4	16.9	14.6	15.4	14.8
Cash-Managed Loans	12,791.3	429	19,127.7	568	22,087.3	733
Component of Primary Servicing (%)	5.4	2.4	9.3	3.4	10.3	4.2

**Assessment:** Berkadia has strong controls over payment processing as demonstrated by its clear Regulation AB attestations and internal audits and the lack of any aged suspense items for non-special servicing-related matters. It has highly automated payment-processing functions.

## Real Estate Tax and Insurance Administration

As of Dec. 31, 2018, approximately 43% of all primary serviced loans were escrowed for real estate taxes. During 2018, Berkadia incurred \$37,502 in nonreimbursable tax penalties involving 10 loans. Tax payments generally are 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 nonescrowed loans. For nonescrowed loans, Berkadia sends a delinquent tax notice to the borrower and tracks the delinquent tax until paid. The servicing system does not automatically generate tax notices. As a master servicer, Berkadia reviews tax payment exception reports from subservicers quarterly.

As of Dec. 31, 2018, approximately 35.3% of all primary serviced loans were escrowed for insurance. Berkadia administers insurance in house and uses external 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. Berkadia stated that it automatically issues its first policy renewal reminder notice to borrowers at 60 days before expiration and again at 30 days before expiration. The company reviews insurance-carrier ratings before renewal for compliance, and it reported that as of Dec. 31, 2018, 29 loans were on its forced-placed policy, which automatically provides for 120 days of retroactive coverage. The forced-placed policy is through Great American Insurance Co., which has an A.M. Best financial strength rating of A+. The company also reviews insurance exception reports from its subservicers annually.

**Assessment:** Berkadia's tax and insurance administration practices are highly controlled, as shown by its low incidence of tax penalties and the degree to which it facilitates the insurance-renewal process as well as its extensive insurance coverage via CertInView. Its forced-placed policy's automatic retroactive coverage provision is sound. As a master servicer, Berkadia follows standard industry practices by reviewing quarterly tax and annual insurance payment exception reports from its subservicers.

### Capital-Expenditure Reserve Management

Portfolio managers work with account managers to review expenditure requests and release funds escrowed in capital-reserve accounts. The company uses the servicing system to manage workflows, track reserve funds, record disbursements, and reanalyze accounts. Before disbursement, management must approve all reserve-account disbursement requests. Berkadia's reserve account management may also involve interest reserve analysis and funding on construction and/or tenant build-out projects. Larger capital improvement/tenant build-out projects may require lien waivers and periodic inspections to verify the progress or completion of the work.

**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 investor reporting package for all CMBS assets through its servicing system. 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 reconciles bank account activity daily, with more formal reconciliations performed at the end of each month. For 2018, the company reported no unidentified items in custodial accounts older than 60 days. As a master servicer, Berkadia reconciles subservicer remittances to trustee remittance reports monthly. Subserving submit a monthly projected remittance report for Berkadia's review.

Berkadia monitors the accuracy and timeliness of investor reporting data through servicing system validations. The system also tracks PSA requirements. The investor reporting group validates realized loss and appraisal reduction calculations. During 2018, Berkadia reported no occurrences involving CMBS remittance recalculations and subsequent restatements of reports to trustees, nor did it report any late reporting occurrences across the whole portfolio during this period.

**Assessment:** Berkadia has proactive, well-controlled practices for investor accounting and reporting functions as demonstrated by its lack of reporting or remitting errors, its high degree of automation, and its segregation of duties. Berkadia has diligent practices for accurate and timely CMBS reporting.

### 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. The company stated that each loan advance is evaluated individually, taking into consideration variables including property type, local market conditions, and resolution strategy. As advances increase relative to value, decisions to discontinue advancing require management approval as delineated in the servicer's approval authorization matrix.

**Table 6 – Berkadia Advancing Activity**

	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2016
Total Advances (P&I and PPA) Outstanding (\$ Volume)*	95,277,887	162,962,876	159,917,447
Total Advances (P&I and PPA) Outstanding (# of Loans)	211	355	403
Average Advance Per Loan (\$)	451,554	459,050	396,817
O/S Advances - P&I Only (\$ Volume)	83,980,170	141,511,745	140,493,941
O/S Advances - P&I Only (# of Loans)	109	175	205
Average Aging of First P&I Advance (Days)	502	-	260
Total O/S Advances to CMBS Servicing Volume (%)**	1.70	1.95	0.88
CMBS Volume (Primary/Master and Master Only)	5,612,525,593	8,375,873,436	18,230,346,346

\*P&I - Principal and interest. PPA - Property protection advances. \*\*CMBS Servicing Volume - UPB of primary/master combined and master only.

**Assessment:** Berkadia maintains effective, controlled advancing and nonrecoverability determination practices. Its stated advancing threshold is more conservative than that of other master servicers. Berkadia stated that, as a rule, it avoids 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 losses to the trust. We support such practices as we believe that master servicers should determine how their methods of recapturing advances will affect the trust cash flows before submitting their reimbursement requests in their realized loss statements, and that they should make every effort to spread the repayment of advances if such spreading can avoid or minimize cash flow shortfalls to the trust.

## Portfolio Surveillance

### Financial Statement Analysis and Inspections

BSIPL largely performs the financial statement spreading and initial review function, and the company reported that experienced staff members make credit decisions based on financial-statement analysis. They communicate directly with borrowers to obtain clarifications on submitted data. Berkadia uses the servicing system for its financial statement analysis. The company, as a CMBS primary servicer, received a high percentage of previous year-end annual financial statements by May 31, 2018, and analyzed 98.0% of those by May 31, 2018. On average, each staff member can spread eight operating statements per day. The company reported that, as a master servicer, it reanalyzes all financials submitted from all subservicers.

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. It inspects all loans greater than \$2 million annually, which we view as a customary practice. During 2018, within primary and master servicing, the company reported 9,400 properties were due for inspection, and 96% were received by or within 30 days of their due dates, 98% of CMBS inspections were received 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.

**Table 7 – Full-Year Historical Financial Statement Collection Rates (%)**

	By May 31, 2018	By May 31, 2017	By May 31, 2016
CMBS Primary Servicing			
Statements Received	99.0	98.2	97.2
Statements Spread and OSARs Reported*	98.0	91.6	99.6
CMBS Master Servicing			
Statements Received	98.0	91.6	93.7
OSARs Reported*	98.0	79.8	99.8

\*Based on total number of required statement submissions by June 30 and July 31.

OSAR - Operating statement analysis report

### Watchlist, Trigger Events, and Early Stage Collections

The portfolio surveillance and reporting group handles watchlist management. Account managers also monitor loan performance and handle any related borrower discussions. Berkadia follows CREFC guidelines for watchlist triggers based on inspection data, financial statement spreads, and other information. The company maintains its own risk-rating system for balance sheet loans or GSE loans with loss sharing components and other watchlists for non-CMBS loans with criteria inclusive of any investor-established requirements. A watchlist committee reviews the status of watchlisted loans and pending actions. Berkadia subjects all subserviced loans to its watchlist criteria. As of Dec. 31, 2018, Berkadia, as a primary servicer or a primary/master combined servicer, reported 6.8% of all serviced loans on its CREFC watchlist, compared

with 5.8% as of Dec. 31, 2017. 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:** Berkadia has effective practices for financial-statement analysis, property inspections, and trigger event and watchlist management. Berkadia reviews subservicer financial statement analysis and loads operating statement analysis report information into Strategy. Output reports are produced detailing variations and triggers in compliance with CREFC reporting. The company's practice of routinely reviewing all inspections submitted from subservicers demonstrates proactive oversight. The company effectively communicates with borrowers through its borrower website and dedicated account managers. Berkadia's stated average time frame to implement springing lockboxes also indicates a proactive process.

**Table 8 – Historical Primary-Servicing Portfolio Delinquency Percentages**

	Dec. 31, 2018		Dec. 31, 2017		Dec. 31, 2016	
	UPB	Loans	UPB	Loans	UPB	Loans
30 Days	0.4	0.4	0.4	0.4	0.4	0.5
60 Days	0.2	0.2	0.2	0.2	0.1	0.1
90+ Days and REO	2.9	2.9	2.9	2.9	3.2	2.6
Total	3.5	3.5	3.5	3.5	3.7	3.2

**Table 9 – Berkadia CMBS Portfolio Delinquencies (Dec. 31, 2018)\***

	Dec. 31, 2018		Dec. 31, 2017		Dec. 31, 2016	
	UPB (\$Mil)	Loans	UPB (\$Mil)	Loans	UPB (\$Mil)	Loans
Delinquency Volume	476.6	70	1,608.4	139	1,712.5	147
Delinquency Volume (%)*	4.5	5.0	11.6	8.0	7.9	5.2

\*Based on total CMBS portfolio, including master-serviced-only loans. All loans delinquent 30 or more days.

### Master Servicing: Subservicer Auditing and Compliance

Berkadia has two dedicated personnel for subservicer auditing and compliance oversight. As of Dec. 31, 2018, it monitored nine subservicers, down from 12 as of Dec. 31, 2017, and 16 subservicers as of Dec. 31, 2016. It tracks all subservicers for annual compliance, which includes collection and review of Regulation AB and 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.

Desktop and on-site audits are performed. On-site visits are generally limited to large volume subservicers with cash-processing capabilities. A scorecard is maintained for each subservicer and focuses on springing lockboxes, consent request tracking, and other trigger events. Each functional unit gathers information to assess subservicer performance. Because of its modest subservicer exposure, Berkadia completed no on-site audits in 2017 and one during 2018, in addition to four desktop audits. None resulted in material findings.

**Assessment:** Berkadia has a solid track record of conducting an effective subservicer audit program and maintaining monthly monitoring of subservicers' reporting completeness, accuracy, and timeliness. However, relatively few of its subservicers have servicing volumes large enough to trigger on-site audits, and none of them perform cash processing responsibilities. Berkadia's overall subservicer auditing activities are consistent with the number of subservicers and the size of their portfolios.

### Borrower Consents and Requests

Berkadia has dedicated asset-management teams to underwrite and close borrower consent requests, including assumptions, leasing and subordination and non-disturbance agreement reviews, and partial property releases. It also relies on BSIPL to assist with borrower requests and has a special-request team within BSIPL that reunderwrites complex requests. U.S.-based account managers serve as initial points of contact. The servicer noted that it manages consent approvals through the servicing system in conjunction with a proprietary application. It also relies on a third-party application to manage and track borrower requests, which routes the inquiry to the appropriate department. A dashboard module within the application provides daily exception reports, which are used for quality controls and process-improvement initiatives. The servicer processed 1,007 borrower consents and 247 assumptions during 2018.

**Table 10 – Borrower Consent Average Processing Times (Days)**

	Full-Year 2018			Full-Year 2017			Full-Year 2016		
	Processed (#)	Internal Time	*Total Time	Processed (#)	Internal Time	*Total Time	Processed (#)	Internal Time	*Total Time
Assumptions	181	82	123	165	69	113	231	74	106
Leasing	307	31	41	533	20	39	914	18	24
Defeasance	75	16	18	143	26	32	238	23	25
Partial Releases	25	38	48	44	33	47	56	33	43
Total	588			885			1,439		

\*The Servicer's internal time plus third-party review time only for those transactions requiring external party consents.

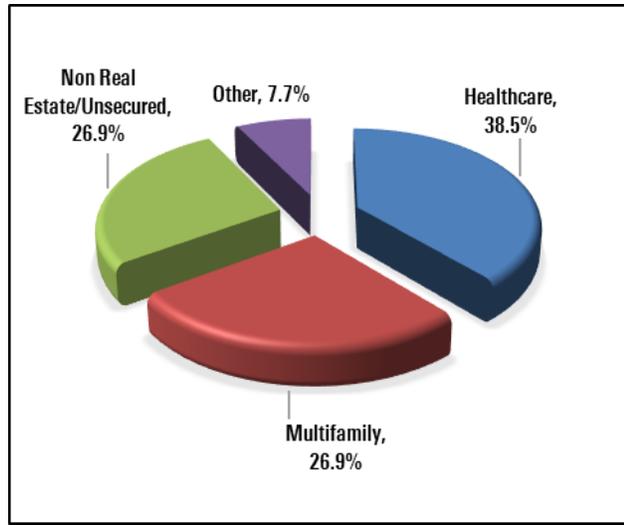
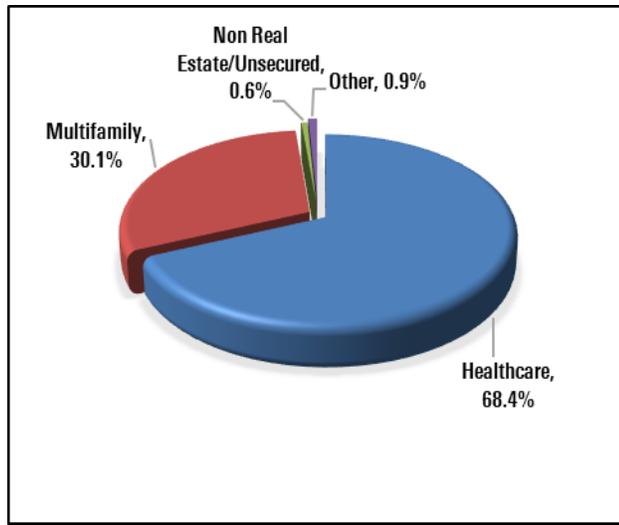
**Assessment:** Berkadia has a suitable workflow practices and staffing for analyzing and approving a high volume of borrower consents. Its controls for analyzing and approving borrower consents are sound. Morningstar recognizes that processing times can often be extended by delays in receiving necessary documentation.

## Special Servicing Administration

As of Dec. 31, 2018, Berkadia’s active special-servicing portfolio had a total UPB of approximately \$120.9 million and contained 26 loans with and no REO properties. The CMBS component of the active special-servicing portfolio had a total UPB of approximately \$1.8 million and contained nine assets with no REO properties. The portfolio included multifamily, funeral homes, and nursing homes.

**Chart 5 – Active Special Servicing by Property Type (UPB)\***

**Chart 6 – Active Special Servicing by Property Type (# of Loans)\***



\*As of Dec. 31, 2018.

## Asset-Review Process

Upon the transfer of a loan to special servicing, asset managers formally notify borrowers and require them to sign prenegotiation letters before workout discussions. Asset managers prepare loan resolution plans generally within 90 days of a loan transfer, and the company stated that such plans, or detailed asset-status reports, 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 formally monitors master servicers’ outstanding advances against property values and expected recovery amounts. It also consults with master servicers on their advancing decisions. In the case of loan modifications, Berkadia stated that it can usually deliver the loan modification boarding package to master servicers within two days of closing. The company usually will not direct master servicers to place partial payments in suspense rather than having such payments applied to the loan. Before the KeyBank transaction, Berkadia had separate asset managers for loans and REO. An asset manager may now handle both loan and REO assets.

**Assessment:** Berkadia has sound and controlled asset recovery practices based on its stated policies and procedures. Though its activity is modest compared with many other special servicers, we believe that Berkadia’s centralized asset-management system serves as an effective tool to track asset-resolution activities, including CMBS-related requirements.

## REO Property Management

During 2018, Berkadia added 17 properties including nine from new nonmonetary or imminent default loan transfers, two from monetary default transfers, six from transfers of loans previously corrected, and one REO sale. By comparison, during 2017, it added five properties and had one property sale. For its REO properties, Berkadia uses single trust accounts rather than separate rent collection and expense accounts for property cash management. It receives monthly operating statements from external property managers and stores that information on the asset-management system. The company's accounting department reconciles external property managers' REO bank accounts. Berkadia requires its own standardized engagement agreement for property managers, and it provides them with a set of reporting guidelines. Because of its minimal REO activity, and the latest REO asset also being land, Berkadia has not conducted any property manager audits in recent years.

**Assessment:** Berkadia's REO property management oversight is well-controlled. Berkadia's separate accounting department performing REO bank account reconciliations is a best practice.

## Vendor Oversight

Berkadia, which maintains a centralized list of approved firms for appraisals, environmental and engineering assessments, legal counsel, property managers, and brokers, has a formal vendor performance review process. It also conducts a request for proposal bidding process for all engagements and uses its own form agreements for vendor engagements. Asset managers select prospective brokers or property managers based on their expertise and cost. Berkadia's in-house legal department engages outside counsel, and it uses its own standard engagement letter. Asset managers review and approve legal invoices before payment for delinquent assets because the legal charges on those assets are billed as property-protection advances. For nondelinquent assets, the legal department approves legal invoices. Asset managers order appraisals and environmental reports and track pending appraisals through the asset-management system.

**Assessment:** Berkadia's process for engaging vendors is well-controlled and highly centralized. We believe that Berkadia's centralized process for qualifying, engaging, and tracking vendor assignments for special servicing work, including the use of standardized forms for all vendors, adds efficiency and consistency, and is an industry best practice.

## Managing Conflicts of Interest

Berkadia, as a special servicer, is unaffiliated with controlling class holders or B-piece buyers in the CMBS transactions it may manage. However, it does not use its affiliate as a broker on note sales or REO sales, or for property management. The company stated that while it has infrequently collected special servicing fees from the trust and from the borrower or other sources, it does not collect fees that exceed the trust contractual fee as outlined in the related PSA. Berkadia stated that it does not use affiliates for its resolution and liquidation strategies, such as for buying assets out of the pool by exercising fair market value purchase options.

**Assessment:** Berkadia has effective controls for managing conflicts of interest for using third-party affiliates and for conducting its asset resolutions. Berkadia has sound controls for managing conflicts of interest, protecting confidential information, and passing through fees to CMBS trusts.

## Asset Resolution and Recovery Performance

As indicated in the tables below, Berkadia's level of asset and recovery activity was modest during 2018 and 2017.

**Table 11 – Special-Servicing Loan Portfolio Activity (2018)**

	Total Vol (\$Mil)	Total Loans	Total Properties	CMBS Vol (\$Mil)	CMBS Loans	CMBS Properties
Loan Portfolio at Beginning of Period	71.6	15	10	1.7	8	2
Loans Transferred into Portfolio:						
Retransferred/Redefaulted Loans	8.4	6	2	0.2	4	0
New Nonmonetary/Imminent Default Transfers	68.0	9	9	0.0	0	0
New Monetary Default Transfers	23.6	2	2	0.0	0	0
Total Transfers into Special Servicing	100.0	17	13	0.0	4	0
Loans Fully Resolved:						
Modified or Corrected Loans	(44.4)	(5)	(4)	0.0	(2)	0
Total Loan Resolutions	(44.4)	(5)	(4)	0.0	(2)	0
Other Cash Recoveries Reducing Portfolio	(6.2)	(1)	0	(0.1)	(1)	0
Loan Portfolio at End of Period	121.0	26	19	1.8	9	2
Average Loan Size at End of Period	4.7			0.2		

**Table 12 – REO Portfolio Activity (2018)**

	Total Vol (\$Mil)	Total Properties	CMBS Vol (\$Mil)	CMBS Properties
REO Portfolio at Beginning of Period	0.1	1	0.1	1
REO Sold During Period	0.0	(1)	0.0	(1)
Other Adjustments	(0.1)	0	(0.1)	0
REO Portfolio at End of Period	0	0	0.0	0

**Table 13 – Special-Servicing Loan Portfolio Activity (2017)**

	Total Vol (\$Mil)	Total Loans	Total Properties	CMBS Vol (\$Mil)	CMBS Loans	CMBS Properties
Loan Portfolio at Beginning of Period	53.0	33	104	2.8	15	3
Loans Transferred into Portfolio:						
Retransferred/Redefaulted Loans	0.1	1	1	0.1	1	1
New Nonmonetary/Imminent Default Transfers	63.8	4	4	0.0	0	0
New Monetary Default Transfers	0.0	0	0	0.0	0	0
Total Transfers into Special Servicing	63.9	5	5	0.1	1	1
Loans Fully Resolved:						
Modified or Corrected Loans	(16.0)	(10)	(11)	(0.2)	(4)	0
Discounted Payoffs	(0.5)	(2)	0	(0.5)	(2)	0
Full Payoffs	(23.6)	(6)	(88)	(0.3)	(2)	(2)
Total Loan Resolutions	(40.1)	(18)	(99)	(1.0)	(8)	(2)
Net Adjustments and Other Loans Transferred Out	(5.2)	(5)	0	(0.2)	0	0
Loan Portfolio at End of Period	71.6	15	10	1.7	8	2
Average Loan Size at End of Period	4.8			0.2		

**Table 14 – REO Portfolio Activity (2017)**

	Total Vol (\$Mil)	Total Properties	CMBS Vol (\$Mil)	CMBS Properties
REO Portfolio at Beginning of Period	0.7	2	0.7	2
Completed Foreclosures	0.0	0	0.0	0
REO Sold During Period	(0.2)	(1)	(0.2)	(1)
Other Adjustments	(0.4)	0	(0.4)	0
REO Portfolio at End of Period	0.1	1	0.1	1

**Assessment:** Based on our review of Berkadia's resolution results, the company demonstrates a successful performance record involving a portfolio of modest volume.

## Investor and Master Servicer Reporting

Berkadia's procedures cover its formal reporting requirements as a CMBS special servicer for reporting property protection advances and realized losses, pursuing updated appraisals, and communicating with other master servicers on asset management decisions. The special servicing components of the monthly investor reporting package 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 input fresh status comments at least monthly for IRP submissions. As a CMBS special servicer, Berkadia provides its initial asset status report to the trustee, and states it subsequently releases the final asset resolution plans containing the specific terms and details of a completed workout or liquidation. The company's procedures address its special servicer reporting responsibilities for its GSE portfolios.

**Assessment:** Berkadia is highly experienced with and has effective special servicer-related reporting capabilities to address CMBS and other investor type requirements.

## Appendix: Overview of Berkadia Services India Private Limited

### Operations Profile

As of Dec. 31, 2018, 347 of Berkadia's servicing personnel (68.0% of the total servicing personnel) were in Hyderabad (where it provides transportation to work for its employees). Berkadia had 438 servicing-related employees in its India operations as of Dec. 31, 2017. The difference is primarily due to the 2018 realignment of positions originally apportioned to servicing into distinct roles associated with a companywide technology initiative. The India operation began with 16 employees in 2002. In addition to the Hyderabad facility, Berkadia has an office in Pune, India, which serves as BSIPL's concurrent disaster recovery site. The Pune site is 320 miles from Hyderabad on a different power grid.

The Hyderabad facility has a diesel-powered electrical generator to provide a continual power source to mitigate the risk of power outages and to enable systems to run without interruption during the execution of critical cash-payment and investor-reporting functions.

Morningstar has observed that turnover rates in India generally tend to be higher than in the U.S. The causes for India's higher turnover rate may be culturally based and reflect that servicing functions are performed during multiple shifts. In addition, the expansion of financial services companies in Hyderabad in recent years has created increasing competition for trained personnel. Given the challenges, however, Morningstar believes Berkadia is managing its India-staff turnover at reasonable levels.

Since its formation, BSIPL has expanded servicing operations using three staffing shifts enabling Berkadia to become a 24/7 servicer. BSIPL's night shift coincides with Berkadia's U.S. hours of operation. In addition, BSIPL's second shift supports vendor and borrower contact and facilitates real-time interaction with U.S. personnel. Berkadia retains technical expertise in Amblar, Salt Lake City, and Hyderabad.

BSIPL was the first company in India to launch a college-level commercial real estate course, which was expanded to four Indian universities.

Berkadia has continued its operational excellence program, first introduced in 2010, to maximize resources within BSIPL and to monitor performance to maintain optimal workloads and mitigate risks. Operational highlights in 2018 included:

- Being named Business Process Organization of the year by CMO Asia for the third consecutive year and being named one of Asia's top employer brands.

- The continued expansion of Berkadia’s mortgage banking and underwriting support. BSIPL reported that it continues to enrich training, technology, and servicing practices, while focusing on process improvement and knowledge sharing to boost productivity.

## Operational Infrastructure

### Organizational Structure

BSIPL’s staff has direct reporting lines to local managers for nonfunctional issues but a direct reporting line to U.S. management for subject matter-specific responsibilities. U.S. managers are accountable for the processes and workflow of the Indian operation. Each servicing function is assigned a BSIPL team leader, who oversees local personnel dedicated to those tasks, and communicates directly with U.S.-based personnel.

**Table 15 – Percentage of Servicing Staff Levels by Location (Dec. 31, 2018)**

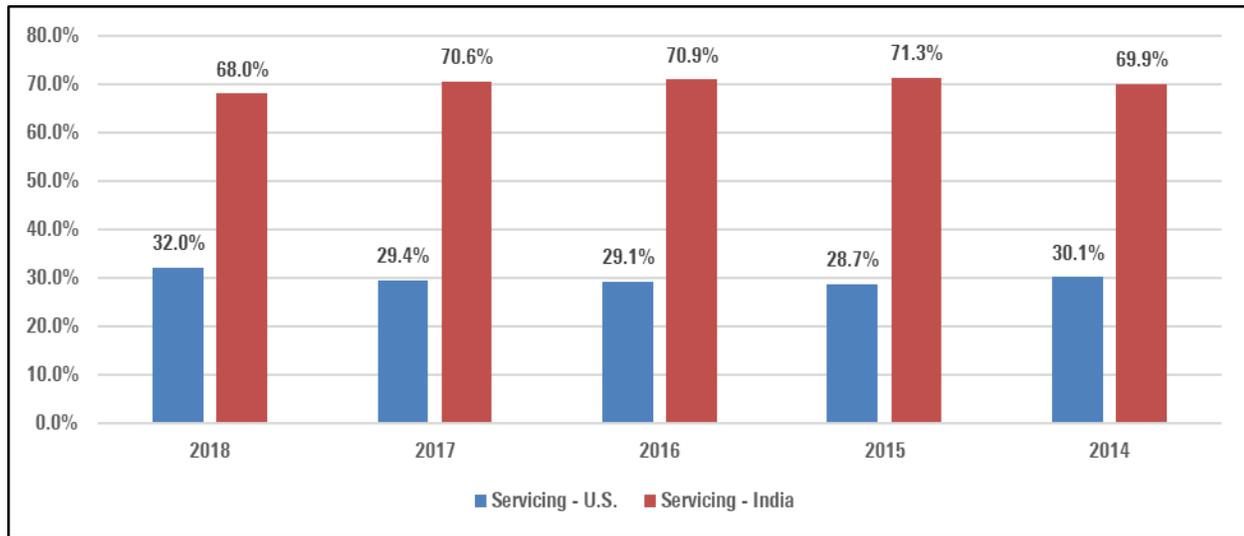
Servicing Activity	% US-based	% India-based
UCC	33	67
Workflow	3	97
FSA/Inspections	6	94
NLB/SDC	28	72
Cash Administration / Bank Reconciliations	27	73
Loan Administration	23	77
Investor Reporting / Payoffs	29	71
Surveillance	29	71
Credit Administration	26	74
Client Relations (Support)	0	100
Client Relations (Voice)	92	8

### Staffing and Experience

**Table 16 – BSIPL Average Years of Experience - Primary/Master Servicing**

	Dec. 31, 2018		Dec. 31, 2017	
	Industry	Tenure at BSIPL	Industry	Tenure at BSIPL
Senior Management	18.6	13.2	17.0	10.6
Middle Management	13.6	12.8	12.7	11.9
Staff	5.8	5.4	5.1	4.2

**Chart 7 – Berkadia: BSIPL Versus U.S. Staffing (2015-18)\***



\*510 was the total servicing headcount as of Dec. 31, 2018.

Berkadia reported that all employees are college graduates, with 62.3% holding postgraduate degrees. About 62.5% of employees had no prior work experience, while approximately 16.5% had prior servicing or banking experience.

Turnover

BSIPL has dedicated resources to monitor and recognize employee performance to control attrition rates. The company conducts monthly performance reviews for each staff member and rewards performance with incremental salary increases. Attrition at the site is due in part to cultural reasons, including matrimonial and family obligations. In India, female employees may leave upon marriage. However, they typically provide sufficient notice, so the company has a succession plan, which includes hiring additional employees who are appropriately trained for the position.

Controllable attrition is defined as employees leaving Berkadia for the following reasons: better perceived opportunity; higher compensation level; dissatisfaction with the position, supervisor, or the overall system; associates leaving for no apparent reason. The company’s goal is to maintain controllable attrition to below 12%. Uncontrollable attrition is defined as employees leaving for: family reasons and further education. For the year ended Dec. 31, 2018, BSIPL experienced 34 controllable attrition-related departures, representing a turnover rate of 8%. By comparison, it experienced 31 controllable attrition-related departures, representing a controllable turnover rate of 7% for 2017.

**Assessment:** Berkadia continues to maintain appropriate staffing levels and has managed its attrition effectively over the past year.

Training

Berkadia combats attrition within BSIPL by providing career development and mentoring. Within BSIPL, the employee commitment involves not only specific job training but also cross-training opportunities, as well as industry-based educational opportunities. In the case of BSIPL, 119 employees successfully completed various campus MBA training modules during 2018, and of these the company expects that 58 employees

will receive MBA CMS level 1 certifications and 53 employees will receive CMS professional level 2 certifications in 2018. As of December 2018, employees within BSIPL received an average of 63 hours per year of training.

Employees earn training credits for classroom training, online courses and webinars, industry-related training, and conferences. They also earn credits for applicable functional, systems, and job-related instructional training. The formal training program covers system applications and sessions tailored for each functional department. The company's trainers have experience with Indian business operations and personnel who are primarily used for voice and general cross training. Senior analysts within each functional group receive corporate training at Berkadia's U.S. offices. The company completed 141 training trips between the U.S. and India during 2018, compared with 122 trips in 2017. In addition, U.S. functional managers travel to India for scheduled training regularly, and BSIPL provides training through video conference calls.

**Assessment:** BSIPL employees undergo a significant amount of training to maintain and build the requisite skills and knowledge required for effective commercial real estate mortgage servicing. BSIPL offers a variety of training programs to develop and maintain employee performance. The company provides career-development opportunities and team-building programs, which help to maintain its staff at appropriate levels necessary for the tasks that BSIPL performs.

### Compliance

Berkadia reported that BSIPL is subject to the same audit regimen as its U.S. operation, and that recent audits did not cite any exceptions related to the BSIPL operation and practices. Specifically, BSIPL is part of Berkadia's annual Regulation AB and USAP attestations and is part of Berkadia's annual SOC 1 and now SOC 2 audit scopes. BSIPL also undergoes quarterly internal audits, and U.S. personnel monitor quarterly exception reports. Berkadia reviews policies and procedures with BSIPL including annual process mapping review.

### Key Performance Measures

Berkadia and BSIPL adhere to key functional performance metrics. Within BSIPL, managers perform quality evaluations at 100% during the 90-day, new employee training period. It measures new hires in accordance with their development plan, which includes quality and production achievement targets. Quality control samples for seasoned analysts are selected randomly using the Six Sigma application based upon the average of their accuracy percentage over the prior three months. Quality control results are reviewed and used as part of the training protocols. Additionally, reports are generated to identify discrepancies. Process improvement methodologies are used to ensure that efficiencies continue to be identified within existing as well as newly transitioned tasks. Monthly feedback and process improvements related to productivity, utilization, capacity, and quality are discussed during dashboard meetings involving both India and U.S. senior management. Process owners in the U.S. review and validate policy and procedures. Berkadia's internal-audit program as well as SSAE 16 procedures, SLA compliance, and external audits complemented quality control processes. During 2018, the financial statement analysis team completed 34,601 property financial statement reviews and achieved an overall average quality score of 99.9%.

### **Portfolio Management**

#### Tasks Performed by BSIPL

The Hyderabad operation handles processes and subprocesses related to all aspects of primary and master servicing, including financial-statement analysis, rent-roll analysis, reserves, payoffs, property-inspection review, bank reconciliations, payment processing, trigger monitoring, client relations, special requests, lease review, real estate services, tax and insurance administration, escrow analysis, surveillance,

asset management, cash management, investor reporting, loan boarding, document workflow, UCC processing, compliance, accounts payable, and IT services.

**Assessment:** Berkadia has highly effective quality controls to ensure accuracy, and productivity measures are addressing the numerous functions performed by BSIPL personnel.

#### Communication with Borrowers, Vendors and U.S. Staff

Morningstar believes that consistent communication is a key component for successful offshoring. We further believe that vertically integrated organizations must focus on fluid and frequent interaction. During 2018, BSIPL servicing personnel spent approximately 544 hours at various Berkadia office locations in the U.S., and Berkadia U.S. servicing managers spent roughly 848 hours at BSIPL. Additionally, Berkadia and BSIPL servicing personnel completed approximately 29,441 hours of training via conference participation, symposium attendance, workshops, internal/on-the-job training, and classroom participation, as well as through technological delivery. We believe that in the case of BSIPL, the subsidiary model lends itself to a significant commitment to employee training and morale, just as it should for any remote office stateside.

Most communication between Berkadia and BSIPL occurs during U.S. business hours so that personnel within each location may communicate without delay. BSIPL personnel communicate primarily with borrowers via email. BSIPL staff does verbally contact borrowers to collect financial statements and insurance agents to gather policy information. The U.S. subject-matter experts are responsible for most borrower phone contact.

**Assessment:** Berkadia takes appropriate measures governing BSIPL's communication practices with borrowers, vendors, and U.S.-based personnel. Permitting BSIPL staff to notify borrowers and other parties via scripted email notification and via limited direct phone contact is acceptable. However, communication problems could arise if a borrower has additional questions that may not be fully understood by the BSIPL analyst. As such, Berkadia demonstrates best practices by requiring U.S.-based personnel to be copied on any communication between BSIPL staff and outside parties. Berkadia has retained appropriate oversight controls with its U.S.-based personnel to govern approvals for cash transactions.

#### **Ranking Definitions**

The numerical scale of MOR CS1 to MOR CS4 is defined as follows:

- |   |  |
|---|--|
| 1 | Exceeds prudent loan servicing standards in key areas of risk    |
| 2 | Demonstrates proficiency in key areas of risk                    |
| 3 | Demonstrates compliance in key areas of risk                     |
| 4 | Demonstrates lack of compliance in one or more key areas of risk |

A servicer assigned a ranking of at least MOR CS3 is deemed to comply with what we view as the minimum prudent loan servicing standards and requirements for the servicer's operational category and role. For access to Morningstar's Operational Risk Assessments of Commercial Servicers: Methodology and Process and other published reports, please visit [www.morningstarcreditratings.com](http://www.morningstarcreditratings.com).

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