

# Markets Update

FOURTH QUARTER 2019

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**Economy** – slow and steady. Record budget and trade deficits in a time of record low unemployment.

### Three trends we are watching

- Cyclical highs in property prices
- Sector overbuilding
- The Retail Purge

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In this issue of the CWCAPITAL Markets Update, we focus on the **fundamentals and trends affecting national commercial real estate debt markets**. Our feature reviews 2019's credit performance and what we can infer about asset class default trends. We synthesize and present information gathered from various industry research, public resources, and our own research.

## ECONOMY

**The November jobs report** noted that the economy continues to grow with 266,000 jobs created. Employment in the health care and professional and business services category again led in jobs creation as we may expect. Healthcare has added 414,000 jobs over the past 12 months, while professional and technical services added 278,000, while the financial services sector added 116,000 for the same period.

**The unemployment rate** remained stable at 3.5%, among the lowest levels since 1969. The participation rate also remained unchanged at 63.2%. Average hourly earnings showed some growth (3.1% year over year), continuing at a slow and steady pace. As of November 2019, El Centro CA, and Yuma AZ continue to have reported the highest unemployment in the nation, while the Dallas, TX, New York, and Los Angeles MSAs lead the nation in number of jobs created.

**The 10-year US Treasury** as of this writing was 1.77%, declining around 92bps from one year earlier. Much of the decline reflects **overall concern around global trade tensions, economic weakness abroad, and geopolitical uncertainty**. The 2/10 spread has now recovered to 27bp from inversion over the summer. In September 2019, the US budget deficit widened to almost \$1 trillion, with the US trade deficit also widening to \$884 billion. With record budget deficits at all-time lows in unemployment, **our outlook is cautious on the economy, interest rates, and commercial real estate values**.

## PROPERTY MARKETS

**Effective rent growth** - National average shows an 1.72% one-year growth rate, the slowest growth rate in the past 5 years. Multi-family rents grew 3.1% for the year, while industrial was less than 1% year over year.

**Vacancy rates** - For the trailing 1-yr period, vacancy rates improved slightly in multi-family and retail properties, with deterioration in office and industrial properties. Estimated deliveries for 2019 increased by 4% for multi-family, but declined by 16%, 5%, and 16% for office, retail, and industrial properties respectively. Absorption was less than 1.0x for all property types. We expect continued vacancy increases as heavy construction pipelines are delivered.

**National property prices** for multi-family increased by 7.85% on a rolling 3-year basis, while hotel properties showed a 3.3% increase after 6 consecutive months of declines. Continuing its macro-decline, retail has lost value per unit (3yr basis) nearly every month for the past 3 years.

## DEBT CAPITAL MARKETS

**Credit spreads** generally tighten in 2019 with CMBS BBB- coming in approximately 140bps for the year. Year-end 2019 CMBS conduit issuance of \$49.6bn is leading last year's issuance by approximately 23%. Competing products such as SASB, FHLMC, and CRE-CLO have seen \$45.4bn, \$69.5bn, and \$19.5bn of issuance at year-end 2019 respectively.

**CMBS risk retention pricing** - Horizontal subordinates in the 14% area, L-shaped subordinates imply pricing of the Non-Rated conduit bonds in the 16%-25% area.

**Conduit delinquency rates** dropped to 1.40% this month, reflecting continued improvement.

# Three Trends we are watching...



### CYCLICAL HIGHS IN PROPERTY PRICES

All property types experiencing price volatility at national level. Multi-family, hotel, and industrial building on a very robust pace. Over-levered properties finding their way into rated securitizations.



### SECTOR OVERBUILDING

Hotels, student housing, multi-family, and now industrial are some of the most over-built asset classes across the market. Construction slowing somewhat relative to prior years. Helps absorption, however, we remain concerned about inventory already in the market.



### THE RETAIL PURGE

Retail assets from malls to local unanchored centers, to single tenant, retail continues to struggle. Constitutes over half of all defaults in 2019. Maturing mall loans having difficulty refinancing even at lower leverage points.

## FEATURE - YEAR IN REVIEW – 2019 DEFAULT TRENDS

One of the most common conversations among investment professionals begins with the question, “so what are you guys seeing”. Year-end 2019 gives us that opportunity to step back and take a look at the past year’s CMBS collateral performance and credit trends. This analysis helps us identify any consistent themes or patterns and helps to answer the common question.

Overall results are identified below:

We reviewed data on over **23,600 conduit loans**, identifying any loan which defaulted or transferred to the Special Servicer during the calendar year 2019.

| Type         | Conduit Universe 12/31/18 |               |                      |                    | 2019 Defaults  |            |                       |                    |
|--------------|---------------------------|---------------|----------------------|--------------------|----------------|------------|-----------------------|--------------------|
|              | \$ Balance                | Loan Count    | Balance Pct of Total | Count Pct of Total | \$ Balance     | Loan Count | Loan Count % of Total | Avg Mos to Default |
| Retail       | 105,229.6                 | 6,954         | 28.6%                | 29.4%              | 2,567.2        | 85         | 39.9%                 | 78                 |
| Office       | 95,697.5                  | 3,632         | 26.0%                | 15.4%              | 1,053.1        | 31         | 14.6%                 | 69                 |
| Lodging      | 49,609.7                  | 3,110         | 13.5%                | 13.2%              | 627.3          | 55         | 25.8%                 | 60                 |
| Multi-Family | 37,999.7                  | 3,727         | 10.3%                | 15.8%              | 334.5          | 22         | 10.3%                 | 54                 |
| Self Storage | 13,030.6                  | 1,608         | 3.5%                 | 6.8%               | -              | -          | 0.0%                  | -                  |
| Industrial   | 18,036.0                  | 1,156         | 4.9%                 | 4.9%               | 48.5           | 4          | 1.9%                  | 68                 |
| Mixed Use    | 23,836.9                  | 1,148         | 6.5%                 | 4.9%               | 256.6          | 9          | 4.2%                  | -                  |
| Mobile Home  | 7,636.7                   | 922           | 2.1%                 | 3.9%               | 21.7           | 2          | 0.9%                  | 83                 |
| Other        | 5,061.5                   | 190           | 1.4%                 | 0.8%               | 76.0           | 4          | 1.9%                  | 21                 |
| Health Care  | 179.0                     | 15            | 0.0%                 | 0.1%               | 4.8            | 1          | 0.5%                  | 161                |
| Defeased     | 11,351.3                  | 1,160         | 3.1%                 | 4.9%               | -              | -          | 0.0%                  | -                  |
| <b>Total</b> | <b>367,668.5</b>          | <b>23,622</b> | <b>100%</b>          | <b>100%</b>        | <b>4,989.9</b> | <b>213</b> | <b>100.0%</b>         | <b>69</b>          |

By balance, nearly 70% of conduit market exposure consists of retail, office, and hotel properties. One may reasonably expect credit and default patterns to be consistent with collateral proportions.



Nearly **\$5 billion (1.4%) in current UPB defaulted** during calendar year 2019 consisting of 200 loans and participations.



Retail led the way, however what is surprising is the disproportionate level of defaults relative to the overall market. At \$2.6 billion, **retail accounted for over 50% of the dollar defaults and nearly 40% of loans by count.**



Office property defaults were \$1.1 billion (21%) in defaults across 31 (15%) loans, while hotels amounted to \$627 million in defaults, with a loan count of 55. **Hotels were the second highest by loan count** and made up over 25% of the year’s total defaults.



Time to default: on average, the retail, office, and hotel loans defaulted (or re-defaulted) **within 69 months or between 5 and 6 years from origination.** Defaults included loans with both 5-year and 10-year terms.

# FEATURE - YEAR IN REVIEW – 2019 DEFAULT TRENDS

For a deeper look at 2019 default patterns and the all-important reason for default across the various asset types, we selected the top 10 loan defaults in each of Office, Retail, and Hotel. We analyzed the loan basis at default, current performance, debt yield, and primary reason as we could best determine from published servicer comments and other research.

Results are presented below: **Top 10 Loan Defaults 2019**

| Type                      | Subtype | Location            | Balance | Basis / Unit | NCF   | Approx DY | NCF / UWNCF | Maturity Reason                                  |
|---------------------------|---------|---------------------|---------|--------------|-------|-----------|-------------|--|
| <b>Retail</b>             |         |                     |         |              |       |           |             |  |
| Starwood Mall Portfolio   | Mall    | FL,VA,NC,MI         | 680.80  | 242          | 54.50 | 8.0%      | 0.80x       | 11/19 Maturity Default - Refi / Extension Issue  |
| Franklin Mills            | Mall    | Philadelphia        | 269.47  | 179          | 17.50 | 6.5%      | 0.86x       | 06/24 Maturity Default - Extended                |
| South Towne Center        | Mall    | Sandy, UT           | 247.19  | 232          | 10.80 | 4.4%      | 0.77x       | 11/19 Maturity Default                           |
| Colonie Center            | Mall    | Albany, NY          | 188.34  | 248          | 9.66  | 5.1%      | 1.19x       | 11/19 Maturity Default - Sale unsuccessful       |
| Park Plaza                | Mall    | Little Rock, AR     | 78.34   | 276          | 7.36  | 9.4%      | 0.75x       | 04/21 Decl Sales, Low DSCR                       |
| North Riverside Park Mall | Mall    | Chicago             | 68.88   | 161          | 6.93  | 10.1%     | 0.99x       | 10/19 Maturity Default                           |
| Harborplace               | Mall    | Baltimore           | 65.80   | 442          | 2.50  | 3.8%      | 0.33x       | 12/22 Low Occupancy, Operating Shortfalls        |
| Greenbrier Mall           | Mall    | Chesapeake, VA      | 64.50   | 72           | 7.13  | 11.1%     | 0.74x       | 12/19 Maturity Default - Unable to Refi          |
| Greece Ridge Center       | Mall    | Rochester, NY       | 64.30   | 62           | 6.60  | 10.3%     | 0.83x       | 10/20 Upcoming Maturity -Possible mod            |
| Mall at Johnson City      | Mall    | Johnson City, TN    | 48.10   | 84           | 6.70  | 13.9%     | 1.01x       | 05/20 Maturity Default - Unable to Refi          |
| <b>Office</b>             |         |                     |         |              |       |           |             |  |
| Two North LaSalle         | CBD     | Chicago             | 127.44  | 184          | 1.69  | 1.3%      | 0.19x       | 11/19 Maturity Default - Ext, new lease w/City   |
| Wellpoint Office Tower    | Sub     | Los Angeles         | 112.14  | 250          | 6.50  | 5.8%      | 0.79x       | 12/19 Maturity Default - Single tenant relocates |
| Koger Center              | Urban   | Tallahassee         | 105.48  | 124          | 11.16 | 10.6%     | 1.15x       | 02/20 Maturity - State of Fla vacating           |
| Aegon Center              | CBD     | Louisville          | 103.09  | 136          | 4.93  | 4.8%      | 0.43x       | 04/19 Maturity Default - Low Occ, Local Market   |
| One Stamford Forum        | CBD     | Stamford, CT        | 101.93  | 202          | 13.62 | 13.4%     | 1.15x       | 07/26 Purdue Pharma BK                           |
| State House Square        | CBD     | Hartford, CT        | 87.55   | 105          | 6.00  | 6.9%      | 0.84x       | 02/20 Tenant Travelers vacates 16% GLA, no refi  |
| 6100 Wilshire             | Urban   | Los Angeles         | 57.55   | 269          | 5.89  | 10.2%     | 1.29x       | 08/24 Cash mgt issue. Tenant BMG vacating (11%)  |
| Hamilton Crossing         | Sub     | Carmel, IN          | 52.78   | 89           | 5.64  | 10.7%     | 0.96x       | 02/27 Tenant ADESA vacated (38%)                 |
| Sea Harbor Office Center  | Sub     | Orlando, FL         | 40.00   | 111          | 4.98  | 12.4%     | 1.33x       | 06/25 Tenant credit rating                       |
| Canyon Corporate Plaza    | Sub     | Phoenix, AZ         | 30.70   | 101          | 4.36  | 14.2%     | 1.63x       | 04/21 Tenant termination option, vacancy         |
| <b>Hotel</b>              |         |                     |         |              |       |           |             |  |
| Marriott Houston West     | FullSvc | Houston, TX         | 69.89   | 116,490      | 4.45  | 6.4%      | 0.66x       | 12/19 Low DSCR, mod 2x, market supply            |
| Doral Arrowwood Hotel     | FullSvc | Rye Brook, NY       | 58.62   | 156,742      | 3.07  | 5.2%      | 0.25x       | 02/20 Pfizer Learning Ctr lease terminated       |
| Crowne Plaza - LaGuardia  | FullSvc | New York            | 58.26   | 162,724      | 4.40  | 7.6%      | 0.79x       | 11/23 Previously Spec Svc, modified, sponsor     |
| DoubleTree San Diego      | FullSvc | San Diego           | 33.90   | 154,815      | 2.28  | 6.7%      | 0.65x       | 04/25 Franchise default, underperform            |
| Hilton College Station    | FullSvc | College Station, TX | 32.67   | 107,815      | 1.78  | 5.5%      | 0.48x       | 11/24 Low DSCR, market supply                    |
| DoubleTree - Cleveland    | FullSvc | Cleveland, OH       | 27.40   | 72,307       | 1.84  | 6.7%      | 0.60x       | 02/26 Low DSCR, market supply, local economy     |
| Oklahoma Hotel Portfolio  | FullSvc | Various, OK         | 25.26   | 78,929       | 2.17  | 8.6%      | 0.63x       | 04/24 Franchise default, underperform            |
| DoubleTree Beachwood      | FullSvc | Cleveland, OH       | 25.25   | 62,492       | 0.53  | 2.1%      | 0.21x       | 10/24 Low DSCR, market supply, local economy     |
| Holiday Inn - Matteson    | FullSvc | Chicago             | 12.70   | 62,888       | 1.88  | 14.8%     | 0.79x       | 08/28 Franchise default                          |
| SpringHill - Lake Charles | LtdSvc  | Lake Charles, LA    | 12.26   | 113,560      | 0.92  | 7.5%      | 0.52x       | 06/19 Low DSCR, market supply                    |

Several observations can be made regarding 2019 credit and performance after reviewing this data.

## RETAIL

**Over 73% of all retail default dollars came from malls in 2019.** All of the Top 10 retail defaults were malls. Almost all of the mall defaults were maturity defaults (some 5yr loans, some 10yr, some previously modified). Nearly all were significantly underperforming underwriting, and **even with debt yields of over 10%-12%, malls appear to have a very tough time refinancing in today's market.** Beyond the Top 10, retail bankruptcies and single tenant properties with exposure to those credits resulted in numerous defaults in 2019.

## OFFICE

Over 70% of all office default dollars were contained in only 10 loans in 2019. Defaults spread across CBD, Urban, and Suburban locations. **The most common default driver is the departure, bankruptcy, or termination option afforded to single or large proportion tenants.** Loans written with maturity dates at or close to lease end dates contain a binary risk profile. Properties can go from full-value to no-value depending on tenant plans.

## HOTEL

By loan count, over 25% of all defaulted loans were hotels. Smaller loan sizes and higher property counts can sometimes make this category seem the largest. **In over 50% of the default cases, borrowers cited local market overbuilding and added competition as the main reason for underperformance.**

Lower room rates and occupancies lead to unfinished improvements, franchise defaults, and properties in disrepair, further **reducing their competitive position in a crowded market.**

# SELECTED MARKET DATA

## Economic and Real Estate Fundamentals and Trends

|                                | 2009   | 2014    | 2016    | 2017    | 2018    | 2019           | 1yr    | 5yr    | 10yr   |
|--------------------------------|--------|---------|---------|---------|---------|----------------|--------|--------|--------|
| <b>Economic</b>                |        |         |         |         |         |                |        |        |        |
| UNEMP                          | 9.90   | 5.60    | 4.70    | 4.10    | 3.90    | <b>3.50</b>    | -0.40% | -2.10% | -6.40% |
| PART                           | 64.60  | 62.70   | 62.70   | 62.70   | 63.10   | <b>63.20</b>   | 0.10%  | 0.50%  | -1.40% |
| GDP                            | 14,567 | 17,616  | 18,869  | 19,831  | 20,898  | <b>21,543</b>  | 3.09%  | 4.46%  | 4.79%  |
| CPI-TTM                        | 2.28%  | -0.05%  | 1.91%   | 2.09%   | 1.40%   | <b>1.53%</b>   | 0.14%  | 1.58%  | -0.74% |
| UST IMPL INF                   | 2.37%  | 1.68%   | 1.95%   | 1.96%   | 1.71%   | <b>1.51%</b>   | -0.20% | -0.17% | -0.86% |
| <b>Interest Rate</b>           |        |         |         |         |         |                |        |        |        |
| 1M LIBOR                       | 0.32%  | 0.17%   | 0.77%   | 1.56%   | 2.50%   | <b>2.02%</b>   | -0.49% | 1.85%  | 1.70%  |
| Eff Fed Funds                  | 0.12%  | 0.12%   | 0.50%   | 1.31%   | 2.40%   | <b>1.90%</b>   | -0.50% | 1.78%  | 1.78%  |
| Prime                          | 3.25%  | 3.25%   | 3.75%   | 4.50%   | 5.50%   | <b>5.00%</b>   | -0.50% | 1.75%  | 1.75%  |
| UST2                           | 1.14%  | 0.67%   | 1.20%   | 1.89%   | 2.49%   | <b>1.62%</b>   | -0.87% | 0.95%  | 0.48%  |
| UST10                          | 3.85%  | 2.17%   | 2.45%   | 2.40%   | 2.69%   | <b>1.66%</b>   | -1.03% | -0.51% | -2.19% |
| 2/10 Spread                    | 2.71%  | 1.50%   | 1.25%   | 0.51%   | 0.20%   | <b>0.04%</b>   | -0.16% | -1.46% | -2.67% |
| Real10                         | 1.48%  | 0.49%   | 0.50%   | 0.44%   | 0.98%   | <b>0.15%</b>   | -0.83% | -0.34% | -1.33% |
| <b>Vacancy (REIS)</b>          |        |         |         |         |         |                |        |        |        |
| Multi                          | 8.00%  | 4.20%   | 4.20%   | 4.50%   | 4.80%   | <b>4.70%</b>   | -0.10% | 0.50%  | -3.30% |
| Retail                         | 10.60% | 10.20%  | 9.90%   | 10.00%  | 10.20%  | <b>10.10%</b>  | -0.10% | -0.10% | -0.50% |
| Office                         | 17.00% | 16.70%  | 15.80%  | 16.40%  | 16.70%  | <b>16.80%</b>  | 0.10%  | 0.10%  | -0.20% |
| Industrial                     | n/a    | 11.20%  | 10.30%  | 8.90%   | 9.40%   | <b>9.80%</b>   | 0.40%  | -1.40% | n/a    |
| Hotel                          |        |         |         |         |         |                |        |        |        |
| <b>Rents (REIS Effective)</b>  |        |         |         |         |         |                |        |        |        |
| Multi                          | 964    | 1,124   | 1,252   | 1,305   | 1,356   | <b>1,416</b>   | 3.13%  | 13.63% | 4.69%  |
| Retail                         | 16.75  | 17.16   | 17.89   | 18.24   | 18.53   | <b>18.79</b>   | 1.18%  | 1.90%  | 1.22%  |
| Office                         | 22.43  | 24.19   | 25.93   | 26.43   | 27.04   | <b>27.67</b>   | 1.99%  | 2.87%  | 2.34%  |
| Industrial                     | n/a    | 4.46    | 4.66    | 4.96    | 5.08    | <b>\$5.19</b>  | 0.58%  | 3.27%  | n/a    |
| Hotel                          |        |         |         |         |         |                |        |        |        |
| <b>National \$PSF (RCA)</b>    |        |         |         |         |         |                |        |        |        |
| Multi                          | 81,953 | 132,159 | 152,206 | 153,656 | 168,075 | <b>174,015</b> | 9.77%  | 6.33%  | 11.23% |
| Retail                         | 144    | 198     | 200     | 177     | 171     | <b>201</b>     | 5.94%  | 0.27%  | 3.97%  |
| Office                         | 152    | 223     | 235     | 241     | 268     | <b>315</b>     | 12.33% | 8.32%  | 10.80% |
| Industrial                     | 47     | 69      | 78      | 79      | 88      | <b>110</b>     | 11.18% | 11.72% | 13.23% |
| Hotel                          | 59,012 | 134,398 | 153,841 | 143,596 | 146,341 | <b>140,068</b> | -3.53% | 0.84%  | 13.74% |
| <b>National Cap Rate (RCA)</b> |        |         |         |         |         |                |        |        |        |
| MF                             | 6.84%  | 6.05%   | 5.70%   | 5.62%   | 5.53%   | <b>5.44%</b>   | -0.09% | -0.61% | -1.39% |
| Ret                            | 7.96%  | 6.63%   | 6.52%   | 6.60%   | 6.51%   | <b>6.59%</b>   | 0.08%  | -0.04% | -1.37% |
| Office                         | 8.75%  | 6.75%   | 6.59%   | 6.73%   | 6.57%   | <b>6.72%</b>   | 0.15%  | -0.03% | -2.03% |
| Ind                            | 8.37%  | 6.99%   | 6.80%   | 6.74%   | 6.48%   | <b>6.15%</b>   | -0.33% | -0.85% | -2.22% |
| Hotel                          | 9.55%  | 8.14%   | 8.50%   | 8.51%   | 8.39%   | <b>8.66%</b>   | 0.27%  | 0.52%  | -0.89% |
| <b>Risk Premium</b>            |        |         |         |         |         |                |        |        |        |
| MF                             | 2.99%  | 3.88%   | 3.25%   | 3.22%   | 2.85%   | <b>3.78%</b>   | 0.94%  | -0.10% | 0.80%  |
| Ret                            | 4.11%  | 4.46%   | 4.07%   | 4.20%   | 3.83%   | <b>4.93%</b>   | 1.10%  | 0.47%  | 0.82%  |
| Office                         | 4.90%  | 4.58%   | 4.14%   | 4.33%   | 3.89%   | <b>5.06%</b>   | 1.17%  | 0.48%  | 0.16%  |
| Ind                            | 4.52%  | 4.82%   | 4.35%   | 4.34%   | 3.80%   | <b>4.49%</b>   | 0.69%  | -0.34% | -0.03% |
| Hotel                          | 5.70%  | 5.97%   | 6.05%   | 6.11%   | 5.71%   | <b>7.00%</b>   | 1.30%  | 1.03%  | 1.30%  |

# CRE FUNDAMENTALS

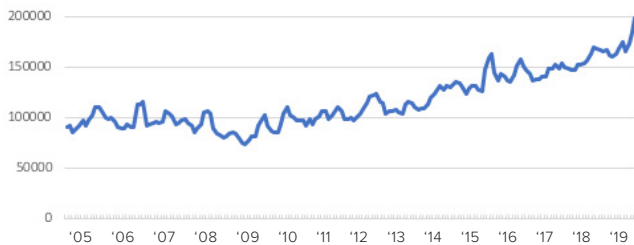
## Property Price, Vacancy, and Rent Growth Trends

| National Average \$price / unit |                  |              |                  |              |              |
|---------------------------------|------------------|--------------|------------------|--------------|--------------|
| Year End                        | MF               | Retail       | Hotel            | Ofc          | Ind          |
| 2005                            | 107,027.7        | 158.3        | 133,060.5        | 197.5        | 62.1         |
| 2006                            | 113,416.2        | 174.3        | 136,504.5        | 232.4        | 66.7         |
| 2007                            | 95,251.4         | 168.9        | 117,311.2        | 255.0        | 68.6         |
| 2008                            | 84,671.0         | 181.3        | 89,940.8         | 199.7        | 63.1         |
| 2009                            | 81,953.2         | 144.0        | 59,012.2         | 151.5        | 47.3         |
| 2010                            | 99,502.6         | 152.1        | 138,350.5        | 222.2        | 51.3         |
| 2011                            | 103,329.8        | 174.8        | 112,827.7        | 213.3        | 60.1         |
| 2012                            | 120,788.9        | 228.0        | 121,202.3        | 225.8        | 62.1         |
| 2013                            | 115,918.7        | 178.3        | 129,720.0        | 230.7        | 64.8         |
| 2014                            | 132,159.3        | 198.4        | 134,397.7        | 222.6        | 69.3         |
| 2015                            | 148,228.2        | 212.7        | 138,162.4        | 239.0        | 72.7         |
| 2016                            | 152,206.0        | 199.6        | 153,841.0        | 234.9        | 77.7         |
| 2017                            | 153,656.0        | 177.4        | 143,596.4        | 241.0        | 79.5         |
| 2018                            | 168,075.2        | 171.4        | 146,340.9        | 268.0        | 88.0         |
| <b>2019E</b>                    | <b>199,186.0</b> | <b>213.0</b> | <b>165,102.0</b> | <b>315.0</b> | <b>109.0</b> |
| Peak                            | 199,186.0        | 248.1        | 201,238.3        | 330.2        | 109.8        |
| Trough                          | 73,804.9         | 128.0        | 59,012.2         | 132.0        | 44.7         |
| Fall fr '06                     | 34.93%           | 26.55%       | 56.77%           | 43.20%       | 33.07%       |
| Peak Date                       | Nov-19           | Aug-16       | Apr-15           | Jul-19       | Sep-19       |
| Trough Date                     | Sep-09           | Jun-10       | Dec-09           | Mar-10       | Apr-10       |
| <b>Curr vs '06</b>              | <b>75.6%</b>     | <b>22.2%</b> | <b>20.9%</b>     | <b>35.5%</b> | <b>63.4%</b> |
| Curr vs Pk                      | 0.0%             | -14.1%       | -18.0%           | -4.6%        | -0.8%        |
| <b>Curr vs Tr</b>               | <b>2.70</b>      | <b>1.66</b>  | <b>2.80</b>      | <b>2.39</b>  | <b>2.44</b>  |
| 5yr GR                          | 7.7%             | -0.8%        | 2.4%             | 3.0%         | 6.3%         |
| 10yr GR                         | 7.1%             | -0.6%        | 5.0%             | 3.0%         | 3.4%         |
| Volatility                      | 11.6%            | 13.6%        | 29.4%            | 17.1%        | 10.8%        |

| Vacancy Trend |             |              |          |              |             |
|---------------|-------------|--------------|----------|--------------|-------------|
| Year End      | MF          | Retail       | Hotel    | Ofc          | Ind         |
| 2005          | 5.70        | 6.80         | -        | 14.70        | -           |
| 2006          | 5.80        | 7.10         | -        | 13.40        | -           |
| 2007          | 5.70        | 7.50         | -        | 12.60        | -           |
| 2008          | 6.70        | 8.90         | -        | 14.50        | -           |
| 2009          | 8.00        | 10.60        | -        | 17.00        | -           |
| 2010          | 6.60        | 11.00        | -        | 17.60        | 14.00       |
| 2011          | 5.30        | 11.00        | -        | 17.40        | 13.20       |
| 2012          | 4.60        | 10.70        | -        | 17.10        | 12.10       |
| 2013          | 4.30        | 10.40        | -        | 16.90        | 11.60       |
| 2014          | 4.20        | 10.20        | -        | 16.70        | 11.20       |
| 2015          | 4.40        | 10.00        | -        | 16.20        | 10.60       |
| 2016          | 4.20        | 9.90         | -        | 15.80        | 10.30       |
| 2017          | 4.50        | 10.00        | -        | 16.40        | 8.90        |
| 2018          | 4.80        | 10.20        | -        | 16.70        | 9.40        |
| <b>2019E</b>  | <b>4.70</b> | <b>10.10</b> | <b>-</b> | <b>16.80</b> | <b>9.80</b> |

| Rent Growth Trend |             |             |          |             |             |
|-------------------|-------------|-------------|----------|-------------|-------------|
| Year End          | MF          | Retail      | Hotel    | Ofc         | Ind         |
| 2005              | 2.89        | 3.23        | -        | 3.19        | -           |
| 2006              | 4.38        | 3.37        | -        | 8.93        | -           |
| 2007              | 4.73        | 2.39        | -        | 10.54       | -           |
| 2008              | 1.95        | (1.02)      | -        | 0.24        | -           |
| 2009              | (2.92)      | (3.68)      | -        | (8.86)      | -           |
| 2010              | 2.39        | (1.43)      | -        | (1.52)      | -           |
| 2011              | 2.43        | (0.06)      | -        | 2.04        | (0.48)      |
| 2012              | 3.86        | 0.48        | -        | 1.95        | 1.91        |
| 2013              | 3.33        | 1.51        | -        | 2.22        | 1.64        |
| 2014              | 3.69        | 1.96        | -        | 3.02        | 2.76        |
| 2015              | 5.16        | 2.21        | -        | 3.18        | 2.02        |
| 2016              | 5.83        | 2.00        | -        | 3.84        | 2.42        |
| 2017              | 4.23        | 1.96        | -        | 1.93        | 6.44        |
| 2018              | 3.94        | 1.20        | -        | 1.80        | 3.41        |
| <b>2019E</b>      | <b>3.13</b> | <b>1.18</b> | <b>-</b> | <b>1.99</b> | <b>0.58</b> |

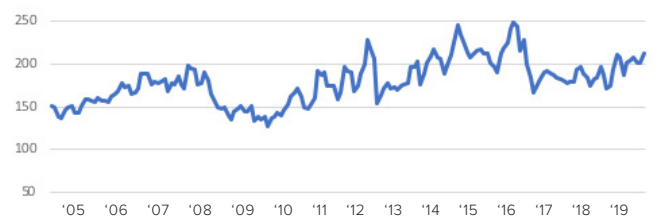
Multifamily (price/unit)



Hotel (price/unit)



Retail (price/unit)



Office (price/unit)

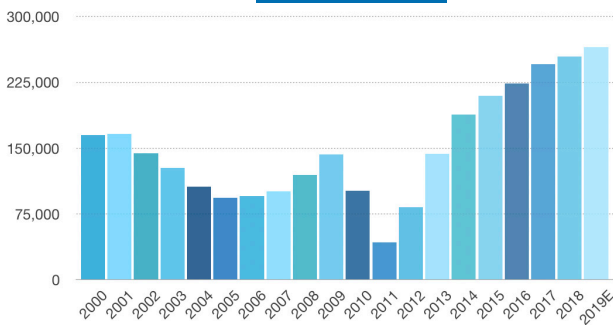


# CRE FUNDAMENTALS

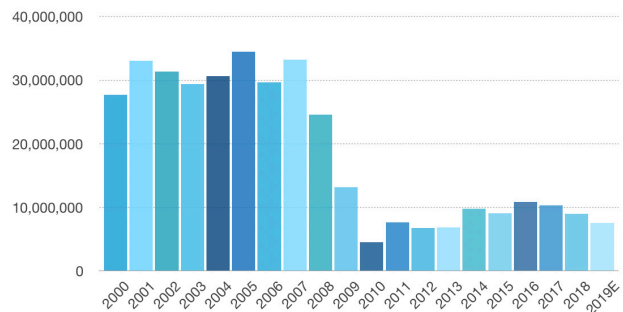
## Commercial Property Deliveries and Absorption

| Year         | Deliveries     |                  |                   |                    | Net Absorption |              |              |              | Notes  |
|--------------|----------------|------------------|-------------------|--------------------|----------------|--------------|--------------|--------------|--|
|              | Multi          | Retail           | Office            | Ind / Whse         | Multi          | Retail       | Office       | Ind / Whse   |  |
| 1999         | 206,040        | 25,126,000       | 120,280,000       | -                  | -              | -            | -            | -            | <p><b>MULTIFAMILY</b></p> <ul style="list-style-type: none"> <li>The building continues</li> <li>Forecast deliveries highest in 20yr</li> <li>Net absorption approx &lt;1.0x, for last 6 consecutive years.</li> </ul> <p><b>RETAIL</b></p> <ul style="list-style-type: none"> <li>Deliveries continue to decline.</li> <li>Declines ~17% vs 2018</li> <li>Net absorption catching up</li> </ul> <p><b>OFFICE</b></p> <ul style="list-style-type: none"> <li>Deliveries relatively stable</li> <li>Net absorption &lt;1.0x for 5 years</li> <li>Slow, steady ~2% rent growth</li> </ul> <p><b>INDUSTRIAL/WAREHOUSE</b></p> <ul style="list-style-type: none"> <li>Deliveries slowing slightly</li> <li>Market anticipating major demand</li> <li>Net absorption appears to be lagging</li> </ul> |
| 2000         | 164,674        | 27,727,000       | 111,061,000       | -                  | 1.34x          | 1.42x        | (1.02)       | -            |  |
| 2001         | 166,124        | 33,013,000       | 134,904,000       | -                  | 0.12x          | 0.59x        | (0.28)       | -            |  |
| 2002         | 143,957        | 31,369,000       | 81,422,000        | -                  | (0.04)         | 0.87x        | (0.15)       | -            |  |
| 2003         | 127,591        | 29,416,000       | 41,016,000        | -                  | 0.35x          | 0.97x        | 0.99x        | -            |  |
| 2004         | 106,144        | 30,596,000       | 35,475,000        | -                  | 0.48x          | 1.06x        | 1.91x        | -            |  |
| 2005         | 93,699         | 34,438,000       | 39,792,000        | -                  | 0.35x          | 1.03x        | 1.43x        | -            |  |
| 2006         | 95,205         | 29,627,000       | 49,879,000        | -                  | (0.03)         | 0.75x        | 1.08x        | -            |  |
| 2007         | 100,630        | 33,254,000       | 59,902,000        | -                  | 0.99x          | 0.71x        | (0.69)       | -            |  |
| 2008         | 119,630        | 24,545,000       | 65,450,000        | -                  | 0.10x          | (0.27)       | (1.18)       | -            |  |
| 2009         | 143,130        | 13,142,000       | 50,548,000        | -                  | 0.02x          | (1.64)       | (0.42)       | -            |  |
| 2010         | 101,268        | 4,499,000        | 23,375,000        | 10,017,000         | 2.27x          | (0.71)       | 0.71x        | (3.51)       |  |
| 2011         | 42,606         | 7,625,000        | 15,440,000        | 13,388,000         | 4.03x          | 0.83x        | 1.01x        | 4.83x        |  |
| 2012         | 82,679         | 6,778,000        | 12,443,000        | 22,585,000         | 1.67x          | 1.67x        | 1.86x        | 3.82x        |  |
| 2013         | 143,227        | 6,883,000        | 25,959,000        | 38,740,000         | 1.14x          | 1.84x        | 1.08x        | 1.73x        |  |
| 2014         | 188,125        | 9,776,000        | 28,287,000        | 76,678,000         | 0.95x          | 1.36x        | 1.36x        | 1.27x        |  |
| 2015         | 209,409        | 9,088,000        | 36,642,000        | 78,848,000         | 0.96x          | 1.36x        | 0.79x        | 1.46x        |  |
| 2016         | 223,840        | 10,815,000       | 36,659,000        | 95,459,000         | 0.96x          | 1.07x        | 0.63x        | 1.42x        |  |
| 2017         | 246,140        | 10,318,000       | 39,048,000        | 137,428,000        | 0.76x          | 0.68x        | 0.74x        | 1.15x        |  |
| 2018         | 254,733        | 8,986,000        | 47,426,000        | 140,190,000        | 0.87x          | 0.14x        | 0.53x        | 0.73x        |  |
| <b>2019E</b> | <b>265,199</b> | <b>7,515,000</b> | <b>45,119,000</b> | <b>117,757,000</b> | <b>0.88x</b>   | <b>0.91x</b> | <b>0.61x</b> | <b>0.49x</b> |  |

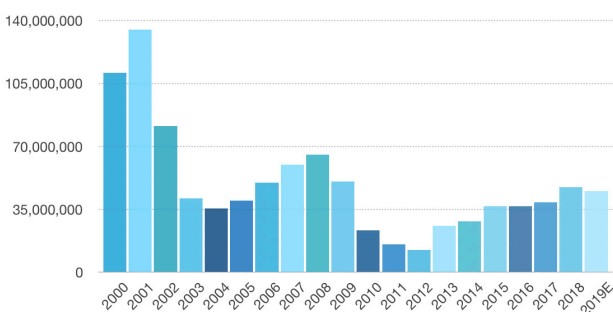
MULTIFAMILY



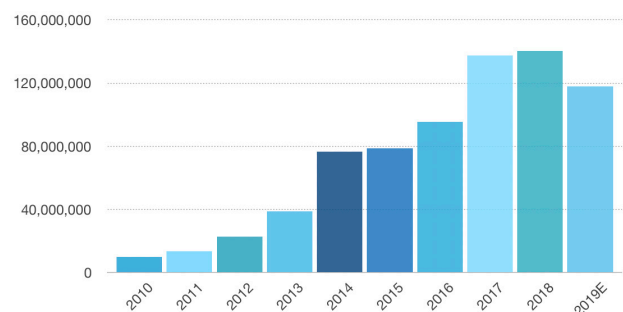
RETAIL



OFFICE



INDUSTRIAL/WAREHOUSE



# SECURITIZED MARKETS

## 2019 CMBS Issuance, Conduit and SASB

| Type | SERIES          | Pricing  | AMOUNT           | SERVICER    | SPSERV         | B-PIECE           | #PROP | #LOAN | RR Type | RR Yld    |  |
|------|-----------------|----------|------------------|-------------|----------------|-------------------|-------|-------|---------|-----------|--|
| CMBS | Q1-19           | Various  | -                | 9,098.15    | -              | -                 | -     | -     | -       | -         |  |
|      | Q2-19           | Various  | -                | 9,508.85    | -              | -                 | -     | -     | -       | -         |  |
|      | MSC 2019-H7     | 07/15/19 | 746.99           | Midland     | LNR Partners   | Argentica         | 81    | 53    | HRZ     | 13.75     |  |
|      | BMARK 2019-B12  | 07/19/19 | 1,429.27         | Midland     | Midland        | KKR               | 117   | 47    | L       | 16.69     |  |
|      | BANK 2019-BNK19 | 07/23/19 | 1,302.47         | Wells Fargo | LNR Partners   | Seer / LNR        | 76    | 73    | VERT    | -         |  |
|      | CGCMT 2019-GC41 | 08/05/19 | 1,276.64         | Midland     | Rialto Capital | Rialto Capital    | 100   | 43    | L       | 17.71     |  |
|      | WFCM 2019-C52   | 08/05/19 | 900.24           | Wells Fargo | LNR Partners   | Argentica         | 126   | 67    | HRZ     | 14.07     |  |
|      | BBCMS 2019-C4   | 08/09/19 | 937.34           | Wells Fargo | Rialto Capital | Rialto Capital    | 377   | 73    | L       | 26.25     |  |
|      | CD 2019-CD8     | 08/09/19 | 811.12           | Midland     | Midland        | Eightfold         | 58    | 33    | L       | 18.05     |  |
|      | BANK 2019-BNK20 | 09/13/19 | 1,237.48         | Wells Fargo | Midland        | Eightfold         | 95    | 72    | VERT    | -         |  |
|      | GSMS 2019-GC42  | 09/16/19 | 1,060.43         | Midland     | Midland        | KKR               | 94    | 36    | L       | 15.60     |  |
|      | CSAIL 2019-C17  | 09/17/19 | 800.42           | Midland     | Midland        | 3650 REIT         | 81    | 37    | HRZ     | 14.35     |  |
|      | BMARK 2019-B13  | 09/20/19 | 951.71           | Midland     | CWCAM          | Eightfold         | 48    | 40    | L       | 17.97     |  |
|      | UBSCM 2019-C17  | 09/26/19 | 807.34           | Wells Fargo | Rialto Capital | Rialto Capital    | 97    | 70    | L       | 23.02     |  |
|      | CF 2019-CF2     | 09/26/19 | 832.91           | KeyBank     | LNR Partners   | LNR Partners      | 136   | 48    | L       | 23.99     |  |
|      | BANK 2019-BNK21 | 09/27/19 | 1,181.00         | Wells Fargo | Rialto Capital | Rialto Capital    | 87    | 49    | VERT    | -         |  |
|      | WFCM 2019-C53   | 10/22/19 | 702.17           | Wells Fargo | Midland        | KKR               | 85    | 58    | HRZ     | 14.53     |  |
|      | GSMS 2019-GSA1  | 10/30/19 | 864.24           | Midland     | LNR Partners   | Argentica         | 84    | 49    | L       | 17.10     |  |
|      | BANK 2019-BNK22 | 10/25/19 | 1,202.15         | Wells Fargo | KeyBank        | Ellington         | 131   | 58    | VERT    | -         |  |
|      | CGCMT 2019-GC43 | 10/29/19 | 936.87           | Wells Fargo | Rialto Capital | Rialto Capital    | 75    | 34    | L       | 20.93     |  |
|      | BMARK 2019-B14  | 11/05/19 | 1,468.65         | Midland     | Midland        | KKR               | 112   | 53    | L       | 16.00     |  |
|      | BBCMS 2019-C5   | 11/05/19 | 1,001.32         | KeyBank     | KeyBank        | Prime / Eightfold | 115   | 55    | L       | 14.5/23.7 |  |
|      | MSC 2019-L3     | 11/08/19 | 1,021.17         | Wells Fargo | LNR Partners   | LNR Partners      | 100   | 51    | L       | 21.50     |  |
|      | WFCM 2019-C54   | 11/08/19 | 669.83           | Wells Fargo | LNR Partners   | Argentica         | 88    | 44    | HRZ     | 13.80     |  |
|      | JPMDB 2019-COR6 | 11/14/19 | 807.18           | Midland     | Midland        | LoanCore          | 117   | 32    | L       | 15.75     |  |
|      | COMM 2019-GC44  | 11/19/19 | 1,151.80         | Midland     | Rialto Capital | Rialto Capital    | 55    | 43    | L       | 18.16     |  |
|      | CSAIL 2019-C18  | 11/20/19 | 689.01           | Midland     | Rialto Capital | Rialto Capital    | 80    | 55    | L       | 25.26     |  |
|      | BANK 2019-BNK23 | 11/21/19 | 1,287.02         | Wells Fargo | KeyBank        | Prime Finance     | 100   | 47    | VERT    | -         |  |
|      | BMARK 2019-B15  | 11/25/19 | 846.61           | Midland     | Midland        | Eightfold         | 87    | 32    | L       | 18.91     |  |
|      | CF 2019-CF3     | 12/09/19 | 789.13           | Midland     | Midland        | KKR               | 67    | 48    | L       | 16.38     |  |
|      | CGCMT 2019-C7   | 12/12/19 | 1,264.15         | Wells Fargo | LNR Partners   | LNR Partners      | 113   | 55    | L       | 16.9/25.1 |  |
|      | UBSCM 2019-C18  | 12/11/19 | 743.57           | Wells Fargo | Rialto Capital | Rialto Capital    | 127   | 55    | L       | 25.99     |  |
|      | BANK 2019-BNK24 | 12/11/19 | 1,225.92         | Wells Fargo | Midland        | Eightfold         | 104   | 71    | VERT    | -         |  |
|      |                 |          | <b>49,553.12</b> |             |                |                   |       |       |         |           |  |

(Continued)



# SECURITIZED MARKETS

## 2019 CMBS Issuance, Conduit and SASB

| Type | SERIES           | Pricing  | AMOUNT            | SELLER                   | SPSERV          | Risk Retention     | Asset                          | RR Type | RR Yld |
|------|------------------|----------|-------------------|--------------------------|-----------------|--------------------|--------------------------------|---------|--------|
| SASB | Q1-19            | Various  | -                 | 7,438.30                 | -               | -                  | -                              | -       | -      |
|      | Q2-19            | Various  | -                 | 12,713.28                | -               | -                  | -                              | -       | -      |
|      | CGCMT 2019-PRM   | 07/11/19 | 278.00            | Prime Group Holdings     | Midland         | Citi               | 2 Self Storage Facilities      | VERT    | -      |
|      | JPMCC 2019-BOLT  | 07/16/19 | 202.39            | Occidental Mgt           | KeyBank         | JPMorgan           | Sprint HQ Bldg - Kansas Cty    | VERT    | -      |
|      | OBP 2019-OBP     | 08/07/19 | 950.00            | Durst, BOA               | Wells Fargo     | NYState Teachers   | One Bryant Park - BOA          | HRZ     | ~L+233 |
|      | CF 2019-MF1      | 08/08/19 | 167.35            | Arbor Realty             | CWCAM           | -                  | 34 Multifamily props           | HRZ     | -      |
|      | BX 2019-MMP      | 08/15/19 | 271.70            | Blackstone, Fairstead    | Trimont         | Morgan Stanley     | 11 NYC apt bldgs               | VERT    | -      |
|      | BHPT 2019-BXHP   | 08/16/19 | 415.00            | Blackstone               | Midland         | -                  | Pentagon City Marriott         | HRZ     | L+432  |
|      | GSCG 2019-600C   | 08/20/19 | 240.00            | We Co., Rhone Group      | Midland         | Goldman            | 600 California, San Francisco  | VERT    | -      |
|      | NCMS 2019-FAME   | 08/29/19 | 211.30            | GAW, DJM Capital         | KeyBank         | Natixis            | Hollywood and Highland         | VERT    | -      |
|      | GSMS 2019-SMP    | 09/10/19 | 218.85            | Starwood Capital         | KeyBank         | Goldman            | 4 Marriott Hotels, AZ, GA      | VERT    | -      |
|      | WFCM 2019-JWDR   | 09/19/19 | 403.00            | Elliott Mgt, Trinity     | CWCAM           | Wells Fargo        | JWMarriott Phoenix Desrt Rig   | VERT    | -      |
|      | JPMCC 2019-BROOK | 09/24/19 | 382.50            | Brookwood Financial      | KeyBank         | Waterfall          | 27 Office - Brookwood          | HRZ     | L+725  |
|      | SGCMS 2019-PREZ  | 09/27/19 | 157.60            | Post Brothers, Ackman    | Aegon           | SocGen             | Presidential City - Phila      | VERT    | -      |
|      | AFHT 2019-FAIR   | 09/27/19 | 300.00            | Manchester, Colony       | Berkadia        | BOA                | Fairmont Austin                | VERT    | -      |
|      | BFLD 2019-DPLO   | 10/02/19 | 460.00            | Brookfield               | Situs           | KSL                | Diplomat Beach Resort          | HRZ     | L+425  |
|      | GSMS 2019-70P    | 10/04/19 | 386.00            | DTH, Rose Associates     | Situs           | Prima Capital      | 70 Pine St NYC                 | HRZ     | L+375  |
|      | BX 2019-XL       | 10/09/19 | 5,600.00          | Blackstone               | Aegon           | Prima Capital      | 3 Industrial Props             | HRZ     | L+375  |
|      | JPMCC 2019-PCC   | 10/11/19 | 135.00            | Brookfield               | Midland         | JPMorgan           | Park City Mall - Lancaster, Pa | VERT    | -      |
|      | DCOT 2019-MTC    | 10/16/19 | 404.00            | Carr Properties          | CWCAM           | WF, BOA, GS        | FNMA Headqtrs, Washington      | VERT    | -      |
|      | COMM 2019-WCM    | 10/17/19 | 415.00            | Blackstone               | Situs           | Deutsche Bank      | 10 Multifamily, CA, WA, AZ     | VERT    | -      |
|      | BX 2019-ATL      | 10/18/19 | 243.70            | Blackstone               | CWCAM           | Citibank           | Hyatt Regency Atlanta          | VERT    | -      |
|      | NCMS 2019-1776   | 10/18/19 | 218.07            | KB Financial             | Midland         | Natixis            | Patriots Pk Ofc, Reston, Va    | VERT    | -      |
|      | CPTS 2019-CPT    | 10/31/19 | 825.00            | J.P. Morgan, Hines       | Situs           | WF, DB, MS         | Century Plaza, Los Angeles     | VERT    | -      |
|      | JAX 2019-LIC     | 11/07/19 | 725.00            | Tishman Speyer           | Aegon           | BOA, WF            | JacksonPk Multfam, Queens      | VERT    | -      |
|      | CGDB 2019-MOB    | 11/12/19 | 490.00            | Starwood Property        | KeyBank         | Citibank, Deutsche | 34 Medical Office              | VERT    | -      |
|      | BBCMS 2019-BWAY  | 11/18/19 | 350.00            | Shorenstein Properties   | KeyBank         | Blackrock          | 1407 Broadway, NYC             | HRZ     | L+525  |
|      | MSC 2019-MEAD    | 11/15/19 | 615.00            | Brookfield Property      | Midland         | Morgan Stanley     | Park Meadows Mall, Colorado    | VERT    | -      |
|      | FMBT 2019-FBLU   | 11/22/19 | 975.00            | Fontainebleau Dev        | Situs           | KSL                | Fontainebleau Miami            | HRZ     | Fixed  |
|      | CLNY 2019-IKPR   | 11/27/19 | 755.00            | Colony, Chatham          | CWCAM           | MS, BOA, JPM       | 46 hotels in 16 states         | VERT    | -      |
|      | BX 2019-CALM     | 11/22/19 | 394.00            | Blackstone               | Situs           | Barclays, SocGen   | 7 multifamily, SoCal           | VERT    | -      |
|      | BAMLL 2019-BPR   | 11/27/19 | 895.00            | Brookfield               | Aegon           | BOA                | Natick Mall, Merrick Pk Mall   | VERT    | -      |
|      | HY 2019-55HY     | 12/02/19 | 810.50            | Related, Oxford, Mitsui  | CWCAM           | WF, DB, MS         | 55 Hudson Yards, NYC           | VERT    | -      |
|      | MAD 2019-650M    | 12/05/19 | 214.20            | Vornado, Oxford          | LNR Partners    | Citibank, GS, BB   | 650 Madison Ave, NYC           | VERT    | -      |
|      | BX 2019-OC11     | 12/06/19 | 1,910.00          | Blackstone, MGM          | Situs           | MS, Citi, JPM      | Belagio - Las Vegas            | VERT    | -      |
|      | MBRT 2019-MBR    | 12/06/19 | 370.00            | Ohana RE                 | Situs           | Goldman, WF        | Monarch Beach Resort           | VERT    | -      |
|      | MRCD 2019-PARK   | 12/05/19 | 955.00            | Maximus RE Ptnr          | KeyBank         | Oaktree            | Parkmerced Multifamily, SF     | HRZ     | 10.15  |
|      | GWT 2019-WOLF    | 12/11/19 | 1,700.00          | Blackstone, Centerbridge | Situs           | KSL                | Great Wolf Resorts             | HRZ     | L+500  |
|      | BWAY 2019-1633   | 12/13/19 | 250.00            | Paramount Group          | Situs           | Prima Capital      | 1633 Broadway, NYC             | HRZ     | Fixed  |
|      | MSC 2019-NUGS    | 12/12/19 | 277.10            | Beacon Capital           | KeyBank         | Morgan Stanley     | Wells Fargo Arena, Denver      | VERT    | -      |
|      | CSMC 2019-UVIL   | 12/11/19 | 305.00            | Stuart M. Sloan          | Cohen Financial | Square Mile        | Univ Village Retail - Seattle  | HRZ     | 5.80   |
|      | NCMS 2019-MILE   | 12/19/19 | 408.17            | Onni Group               | Midland         | Natixis            | Willshire Ctyd Ofc, LosAngeles | VERT    | -      |
|      |                  |          | <b>45,435.006</b> |                          |                 |                    |                                |         |        |

| Subordinate Buyer | Conduit          | SASB             | Total            | Special Servicers | Conduit          | SASB             | Total            | Type    | Balance          | Deals     |
|-------------------|------------------|------------------|------------------|-------------------|------------------|------------------|------------------|---------|------------------|-----------|
| Rialto Capital    | 11,732.23        | -                | 11,732.23        | Midland           | 19,185.63        | 5,872.82         | 25,058.45        |         |                  |           |
| KKR               | 9,286.48         | 1,380.00         | 10,666.48        | Situs             | -                | 13,566.58        | 13,566.58        | Conduit |                  |           |
| Eightfold         | 7,364.27         | -                | 7,364.27         | KeyBank           | 5,667.09         | 7,690.66         | 13,357.75        |         |                  |           |
| Prime Finance     | 3,606.55         | -                | 3,606.55         | LNR Partners      | 11,286.98        | 1,364.20         | 12,651.18        | VERT    | 14,457.22        | 13        |
| Prime / LNR       | 883.52           | -                | 883.52           | Rialto Capital    | 11,732.23        | 390.00           | 12,122.23        | HRZ     | 11,874.65        | 16        |
| Prime / Ellington | 974.84           | -                | 974.84           | Aegon             | -                | 7,795.10         | 7,795.10         | L       | 23,221.25        | 24        |
| Prime / Eightfold | 1,001.32         | -                | 1,001.32         | CWCAM             | 951.71           | 4,025.75         | 4,977.46         |         | <b>49,553.12</b> | <b>53</b> |
| Ellington / Prime | 833.03           | -                | 833.03           | Trimont           | -                | 3,174.90         | 3,174.90         |         |                  |           |
| LNR Partners      | 3,876.19         | -                | 3,876.19         | Wells Fargo       | -                | 950.00           | 950.00           |         |                  |           |
| Argentia          | 3,181.29         | -                | 3,181.29         | C-III             | 729.48           | -                | 729.48           |         |                  |           |
| LoanCore          | 2,279.91         | -                | 2,279.91         | Cohen Financial   | -                | 305.00           | 305.00           | SASB    |                  |           |
| Seer / LNR        | 1,302.47         | -                | 1,302.47         | Berkadia          | -                | 300.00           | 300.00           | VERT    | 21,166.87        | 27        |
| 3650 REIT         | 1,629.67         | -                | 1,629.67         | None              | -                | -                | -                | HRZ     | 24,268.13        | 21        |
| Ellington         | 1,202.15         | -                | 1,202.15         |                   | -                | -                | -                | L       | -                | -         |
| Ready Capital     | 399.21           | -                | 399.21           |                   | -                | -                | -                |         | 45,435.01        | 48        |
| RR Holders>       | -                | 44,055.01        | 44,055.01        |                   |                  |                  |                  |         |                  |           |
| <b>Total</b>      | <b>49,553.12</b> | <b>45,435.01</b> | <b>94,988.12</b> |                   | <b>49,553.12</b> | <b>45,435.01</b> | <b>94,988.12</b> |         | <b>94,988.12</b> |           |

# SECURITIZED MARKETS

## 2019 FHLMC Issuance

| Type         | SERIES           | PRICING  | AMOUNT   | SERVICER   | SPSERV   | B-PIECE  | #PROP  | #LOAN  |  |
|--------------|------------------|--|--|--|--|--|--|--|--|
| <b>1H-19</b> | Various          | 30   | 28,113.24  | Various  | Various  | Various  | 2,389  | 2,391  |  |
| <b>FREMF</b> | <b>7-Year</b>    | FREMF 2019-K735<br>FREMF 2019-K736   | 07/17/19<br>09/04/19   | 1,410.94<br>1,479.50   | Wells Fargo<br>Midland   | Wells Fargo<br>Wells Fargo   | Bridge<br>Berkshire Group  | 49<br>43   | 49<br>43   |
| <b>FREMF</b> | <b>10-Year</b>   | FREMF 2019-K94<br>FREMF 2019-K95<br>FREMF 2019-K96<br>FREMF 2019-K97<br>FREMF 2019-K98<br>FREMF 2019-K99<br>FREMF 2019-K100<br>FREMF 2019-K101<br>FREMF 2019-K102<br>FREMF 2019-K103       | 07/09/19<br>08/01/19<br>08/13/19<br>09/10/19<br>10/02/19<br>10/23/19<br>11/05/19<br>11/20/19<br>12/03/19<br>12/11/19 | 1,330.28<br>1,266.54<br>1,376.21<br>1,469.23<br>1,435.31<br>1,541.07<br>1,379.69<br>1,459.70<br>1,368.29<br>1,276.32 | Wells Fargo<br>Wells Fargo<br>Wells Fargo<br>KeyBank<br>KeyBank<br>Midland<br>Wells Fargo<br>KeyBank<br>Wells Fargo<br>Midland | Wells Fargo<br>Wells Fargo<br>Wells Fargo<br>KeyBank<br>KeyBank<br>KeyBank<br>Wells Fargo<br>KeyBank<br>Wells Fargo<br>Wells Fargo | Morgan Prop<br>NYMT<br>Bridge<br>NexPoint Advisors<br>Bayview<br>NexPoint Advisors<br>NYMT<br>RREEF America<br>Morgan Prop<br>NYMT                               | 69<br>53<br>59<br>57<br>63<br>54<br>70<br>58<br>46<br>46 | 65<br>53<br>59<br>57<br>59<br>54<br>70<br>58<br>46<br>46 |
|              | <b>15-Year</b>   | FREMF 2019-K1512<br>FREMF 2019-K1513<br>FREMF 2019-K1514   | 07/22/19<br>10/18/19<br>12/05/19   | 754.69<br>796.85<br>719.66   | KeyBank<br>Wells Fargo<br>Midland  | KeyBank<br>CWCAM<br>CWCAM  | Priderock<br>Ang Gordon / McDowell<br>Related Cos.   | 24<br>47<br>29   | 24<br>47<br>29   |
|              | <b>Floater</b>   | FREMF 2019-KF64<br>FREMF 2019-KF65<br>FREMF 2019-KF66<br>FREMF 2019-KF67<br>FREMF 2019-KF68<br>FREMF 2019-KF69<br>FREMF 2019-KF70<br>FREMF 2019-KF71<br>FREMF 2019-KF72<br>FREMF 2019-KF73 | 07/23/19<br>08/07/19<br>08/14/19<br>09/11/19<br>10/03/19<br>10/24/19<br>10/31/19<br>11/06/19<br>11/19/19<br>12/12/19 | 770.86<br>831.93<br>853.62<br>798.37<br>795.27<br>854.62<br>839.20<br>821.33<br>782.19<br>850.72                     | KeyBank<br>KeyBank<br>Midland<br>KeyBank<br>KeyBank<br>Midland<br>KeyBank<br>Midland<br>Wells Fargo<br>Wells Fargo             | CWCAM<br>CWCAM<br>CWCAM<br>KeyBank<br>CWCAM<br>CWCAM<br>KeyBank<br>CWCAM<br>KeyBank<br>CWCAM                                       | Blackstone<br>Related Cos.<br>Kayne Anderson<br>Harbor<br>Berkshire Group<br>Kayne Anderson<br>Axonic Capital<br>Greystar<br>NexPoint Advisors<br>Kayne Anderson | 26<br>26<br>30<br>21<br>30<br>33<br>32<br>34<br>27<br>38 | 26<br>26<br>30<br>21<br>29<br>33<br>32<br>34<br>27<br>38 |
|              | <b>Jr Lien</b>   | FREMF 2019-KJ25<br>FREMF 2019-KJ26<br>FREMF 2019-KJ27  | 09/18/19<br>10/16/19<br>11/20/19   | 454.82<br>324.96<br>213.63   | Freddie Mac<br>Freddie Mac<br>Freddie Mac  | Midland<br>KeyBank<br>KeyBank  | Related Cos.<br>Harbor<br>Berkshire Group  | 79<br>62<br>48   | 79<br>62<br>39   |
|              | <b>Small Bal</b> | FRESB 2019-SB64<br>FRESB 2019-SB65<br>FRESB 2019-SB66<br>FRESB 2019-SB67<br>FRESB 2019-SB68<br>FRESB 2019-SB69   | 07/11/19<br>08/15/19<br>09/11/19<br>10/10/19<br>11/14/19<br>12/11/19   | 442.62<br>617.22<br>574.37<br>604.41<br>536.45<br>458.92   | Freddie Mac<br>Freddie Mac<br>Freddie Mac<br>Freddie Mac<br>Freddie Mac<br>Freddie Mac   | KeyBank<br>KeyBank<br>CWCAM<br>KeyBank<br>Newmark<br>KeyBank   | Tilden Park<br>Axonic Capital<br>Bayview<br>Tolis Advisors<br>Sabal Financial<br>Axonic Capital  | 163<br>219<br>219<br>195<br>194<br>179                   | 163<br>219<br>219<br>195<br>194<br>179                   |
|              | <b>Wkforce</b>   | FREMF 2019-KW09<br>FREMF 2019-KW10   | 07/26/19<br>11/14/19   | 626.81<br>526.81   | Midland<br>Wells Fargo   | CWCAM<br>Wells Fargo   | Morgan Prop<br>Bridge  | 43<br>39   | 43<br>39   |
|              | <b>Large</b>     | FREMF 2019-KL05  | 08/06/19   | 1,073.98   | Midland  | KeyBank  | Axonic / Harbor  | 22   | 22   |
|              | <b>Prepay</b>    | FREMF 2019-KC04<br>FREMF 2019-KC05<br>FREMF 2019-KC06<br>FREMF 2019-KC07   | 06/05/19<br>10/30/19<br>11/14/19<br>12/05/19   | 560.32<br>669.48<br>608.36<br>666.36   | Midland<br>Wells Fargo<br>Midland<br>Midland   | CWCAM<br>Wells Fargo<br>CWCAM<br>KeyBank   | Blackstone<br>Not Identified<br>Ang Gordon / McDowell<br>Redwood Trust   | 17<br>26<br>25<br>31                                     | 17<br>26<br>25<br>31                                     |
|              | <b>Senior</b>    | FREMF 2019-KS11<br>FREMF 2019-KS12<br>FREMF 2019-KS13  | 08/09/19<br>09/19/19<br>11/07/19   | 438.11<br>1,300.00<br>498.00   | Wells Fargo<br>Wells Fargo<br>Wells Fargo  | Wells Fargo<br>CWCAM<br>Midland  | Bridge<br>Harbor<br>KKR  | 42<br>49<br>27   | 2<br>3<br>2  |
|              | <b>Misc</b>      | MF1 2019-Q009<br>BOC 2019-Q010<br>FREMF 2019-KI04<br>FREMF 2019-KLU2<br>FREMF 2019-KG02  | 07/09/19<br>07/25/19<br>08/08/19<br>10/10/19<br>10/10/19   | 562.92<br>573.34<br>532.69<br>768.32<br>544.14   | Freddie Mac<br>Freddie Mac<br>Freddie Mac<br>Freddie Mac<br>Midland  | KeyBank<br>Situs<br>CWCAM<br>CWCAM<br>CWCAM  | MF1 REIT<br>Not Identified<br>Kayne Anderson<br>Kayne Anderson<br>Morgan Prop  | 24<br>168<br>18<br>17<br>17                              | 22<br>168<br>18<br>17<br>17                              |
|              |                  |  | <b>79</b>  | <b>69,552.66</b>   |  |  |  |  |  |

| Subordinate Buyer     | Deals | Deal Balance |                 |              |                     |
|-----------------------|-------|--------------|-----------------|--------------|---------------------|
| Bridge                | 9     | 9,512.82     | Axonic / Harbor | 1            | 1,073.98            |
| Kayne Anderson        | 8     | 6,927.71     | Tilden Park     | 2            | 1,065.10            |
| NYMT                  | 5     | 6,225.32     | Connor / Ares   | 1            | 702.38              |
| Berkshire Group       | 5     | 5,321.44     | Redwood Trust   | 1            | 666.36              |
| Morgan Prop           | 5     | 5,313.78     | MF1 REIT        | 1            | 562.92              |
| NexPoint Advisors     | 4     | 4,801.73     | KKR             | 1            | 498.00              |
| RREEF America         | 3     | 3,618.96     | <b>Total</b>    | <b>79</b>    | <b>69,552.66</b>    |
| Harbor                | 5     | 3,614.79     |                 |              |                     |
| Axonic Capital        | 5     | 3,155.23     | <b>Spec Svc</b> | <b>Deals</b> | <b>Deal Balance</b> |
| Related Cos.          | 4     | 2,877.42     | Wells Fargo     | 20           | 22,988.49           |
| Bayview               | 3     | 2,493.38     | KeyBank         | 28           | 22,880.91           |
| Blackstone            | 3     | 2,261.73     | CWCAM           | 23           | 18,969.34           |
| Priderock             | 2     | 1,754.00     | Midland         | 3            | 1,823.84            |
| Sabal Financial       | 3     | 1,691.48     | Situs           | 2            | 1,198.00            |
| Greystar              | 2     | 1,538.27     | Newmark         | 2            | 1,066.82            |
| Ang Gordon / McDowell | 2     | 1,405.21     | LNR Partners    | 1            | 625.27              |
| Not Identified        | 2     | 1,242.82     |                 | <b>79</b>    | <b>69,552.66</b>    |
| Tolis Advisors        | 2     | 1,227.83     |                 |              |                     |

# SECURITIZED MARKETS

## 2018 / 2019 CLO Issuance

| Year | ISSUER                               | SERIES    | DATE     | AMOUNT   | SELLER             | SERVICER        | COLMGR             |
|------|--------------------------------------|-----------|----------|----------|--------------------|-----------------|--------------------|
| 2018 | VMC Finance LLC                      | 2018-FL1  | 01/26/18 | 368.09   | Varde Partners     | Trimont         | Varde Partners     |
| 2018 | TPG Real Estate Finance              | 2018-FL1  | 02/05/18 | 932.38   | TPG                | Wells Fargo     | TPG                |
| 2018 | Bridge Debt Strategies               | 2018-FL1  | 02/13/18 | 510.23   | Bridge             | Wells Fargo     | Bridge             |
| 2018 | AREIT Trust                          | 2018-CRE1 | 02/14/18 | 480.38   | Silverpeak         | Wells Fargo     | Silverpeak         |
| 2018 | Bancorp Commercial Mortgage Trust    | 2018-CRE3 | 03/13/18 | 304.27   | Bancorp Bank       | Wells Fargo     | Bancorp Bank       |
| 2018 | BSPRT Ltd.                           | 2018-FL3  | 03/23/18 | 610.00   | Benefit Street     | Situs           | Benefit Street     |
| 2018 | GPMT Ltd.                            | 2018-FL1  | 04/26/18 | 826.57   | Granite Point      | Wells Fargo     | Granite Point Mtg  |
| 2018 | LoanCore Ltd.                        | 2018-CRE1 | 05/18/18 | 1,052.91 | LoanCore Capital   | Situs           | LoanCore Capital   |
| 2018 | Arbor Realty Commercial Ltd.         | 2018-FL1  | 05/23/18 | 560.00   | Arbor Realty       | Arbor           | Arbor Realty       |
| 2018 | Exantas Capital Corp.                | 2018-RSO6 | 06/07/18 | 514.23   | RCC Real Estate    | C-III           | Exantas Capital    |
| 2018 | Ready Capital Mortgage Financing LLC | 2018-FL2  | 06/15/18 | 278.28   | ReadyCap           | KeyBank         | ReadyCap           |
| 2018 | Marathon CRE Ltd                     | 2018-FL1  | 06/22/18 | 470.00   | Marathon Asset Mgt | KeyBank         | Marathon Asset Mgt |
| 2018 | M360 Ltd.                            | 2018-CRE1 | 07/18/18 | 329.74   | M360 Advisors      | Wells Fargo     | M360 Advisors      |
| 2018 | Shelter Growth CRE Ltd.              | 2018-FL1  | 07/20/18 | 415.13   | Shelter Growth Cap | Wells Fargo     | Shelter Growth     |
| 2018 | BDS Ltd.                             | 2018-FL2  | 07/25/18 | 420.02   | Bridge Investment  | Wells Fargo     | Bridge Investment  |
| 2018 | Hunt CRE Ltd.                        | 2018-FL2  | 08/03/18 | 285.00   | Hunt Mortgage      | KeyBank         | Hunt Mortgage      |
| 2018 | Greystone Commercial Ltd             | 2018-HC1  | 09/11/18 | 300.00   | Greystone          | Greystone       | Greystone          |
| 2018 | Bancorp Commercial Mortgage Trust    | 2018-CRE4 | 09/17/18 | 341.00   | Bancorp Bank       | Wells Fargo     | Bancorp Bank       |
| 2018 | BSPRT Ltd.                           | 2018-FL4  | 09/27/18 | 868.40   | Benefit Street     | Situs           | Benefit Street     |
| 2018 | VMC Finance LLC                      | 2018-FL2  | 10/19/18 | 462.30   | VMC Lender         | Trimont         | Varde Partners     |
| 2018 | AREIT Trust                          | 2018-CRE2 | 10/30/18 | 596.31   | Silverpeak         | Wells Fargo     | Silverpeak         |
| 2018 | KREF Ltd.                            | 2018-FL1  | 11/07/18 | 1,000.00 | KKR                | Midland         | KKR                |
| 2018 | TRTX Ltd.                            | 2018-FL2  | 11/15/18 | 1,000.17 | TPG Real Estate    | Situs           | TPG Real Estate    |
| 2018 | OREC Ltd.                            | 2018-CRE1 | 11/20/18 | 350.00   | ORIX               | RED Mtg Capital | ORIX               |
| 2018 | FORT CRE LLC                         | 2018-1    | 11/28/18 | 600.00   | Fortress           | Wells Fargo     | Fortress           |

### 2018 - Year to Date

13,875.40

|      |  |           |          |          |                      |                   |                      |
|------|--|-----------|----------|----------|----------------------|-------------------|----------------------|
| 2019 | BDS Ltd.                                       | 2019-FL3  | 01/28/19 | 600.00   | Bridge Investment    | Wells Fargo       | Bridge Investment    |
| 2019 | GPMT Ltd.                                      | 2019-FL2  | 02/14/19 | 825.00   | Granite Point        | Wells Fargo       | Granite Point        |
| 2019 | NLY Ltd.                                       | 2019-FL2  | 02/15/19 | 857.30   | Annaly               | Trimont           | Annaly               |
| 2019 | Bancorp Commercial Mortgage Trust              | 2019-CRE5 | 03/08/19 | 518.30   | Bancorp Bank         | KeyBank           | Bancorp Bank         |
| 2019 | LMREC LLC                                      | 2019-CRE3 | 03/26/19 | 500.00   | LaSalle Mtg Real Est | Northmarq         | LaSalle Mtg Real Est |
| 2019 | Ready Capital Mortgage Financing LLC           | 2019-FL3  | 03/29/19 | 320.80   | ReadyCap             | KeyBank           | ReadyCap             |
| 2019 | Exantas Capital Corp.                          | 2019-RSO7 | 04/04/19 | 687.20   | Exantas              | C-III             | Exantas              |
| 2019 | PFP Ltd.                                       | 2019-5    | 04/11/19 | 764.20   | Prime Finance        | Wells Fargo       | Prime Finance        |
| 2019 | LoanCore Ltd.                                  | 2019-CRE2 | 05/07/19 | 1,057.23 | LoanCore Capital     | Situs             | LoanCore Capital     |
| 2019 | Arbor Realty Commercial Real Estate Notes Ltd. | 2019-FL1  | 05/14/19 | 650.00   | Arbor Realty         | Arbor Multifamily | Arbor Realty         |
| 2019 | Grand Avenue CRE Ltd.                          | 2019-FL1  | 05/16/19 | 625.00   | DoubleLine Capital   | Wells Fargo       | DoubleLine Capital   |
| 2019 | BSPRT Ltd.                                     | 2019-FL5  | 05/20/19 | 810.00   | Benefit Street       | Situs             | Benefit Street       |
| 2019 | Shelter Growth CRE Ltd.                        | 2019-FL2  | 05/21/19 | 453.70   | Shelter Growth       | Situs             | Shelter Growth       |
| 2019 | LoanCore Ltd.                                  | 2019-CRE3 | 05/23/19 | 415.85   | LoanCore Capital     | Situs             | LoanCore Capital     |
| 2019 | BDS Ltd.                                       | 2019-FL4  | 07/17/19 | 525.00   | Bridge Investment    | Wells Fargo       | Bridge Investment    |
| 2019 | STWD Ltd.                                      | 2019-FL1  | 07/26/19 | 1,100.00 | Starwood Property    | Wells Fargo       | Starwood Property    |
| 2019 | A10 Bridge Asset Financing LLC                 | 2019-B    | 07/29/19 | 320.00   | A10 Capital          | A10 Capital       | A10 Capital          |
| 2019 | AREIT Trust                                    | 2019-CRE3 | 08/09/19 | 717.92   | Argentica            | Wells Fargo       | Argentica            |
| 2019 | M360 Ltd.                                      | 2019-CRE2 | 08/14/19 | 360.00   | M360 Advisors        | Wells Fargo       | M360 Advisors        |
| 2019 | Greystone CRE Notes Ltd.                       | 2019-FL2  | 08/14/19 | 600.00   | Greystone            | Greystone         | Greystone            |
| 2019 | Bancorp Commercial Mortgage Trust              | 2019-CRE6 | 09/13/19 | 778.24   | Bancorp Bank         | Midland           | Bancorp Bank         |
| 2019 | VMC Finance LLC                                | 2019-FL3  | 09/18/19 | 627.54   | VMC Lender           | Trimont           | Varde Partners       |
| 2019 | Prima Capital CRE Securitization Ltd.          | 2019-7    | 10/01/19 | 283.36   | Prima Capital Adv    | Midland           | Prima Capital Adv    |
| 2019 | CLNC Ltd.                                      | 2019-FL1  | 10/10/19 | 1,006.50 | Colony               | KeyBank           | Colony               |
| 2019 | TRTX Ltd.                                      | 2019-FL3  | 10/10/19 | 1,230.33 | TPG Real Estate      | Situs             | TPG Real Estate      |
| 2019 | Arbor Realty Commercial Real Estate Notes Ltd. | 2019-FL2  | 11/01/19 | 635.00   | Arbor Realty         | Arbor Multifamily | Arbor Realty         |
| 2019 | FS Rialto Ltd.                                 | 2019-FL1  | 11/18/19 | 426.23   | FS Credit RE         | Wells Fargo       | FS Credit            |
| 2019 | PFP Ltd.                                       | 2019-6    | 11/20/19 | 760.11   | Prime Finance        | Wells Fargo       | Prime Finance        |
| 2019 | MF1 Ltd.                                       | 2019-FL2  | 11/25/19 | 670.00   | MF1 REIT             | KeyBank           | MF1 REIT             |
| 2019 | ACAM Ltd.                                      | 2019-FL1  | 12/10/19 | 400.27   | Amherst Capital      | Wells Fargo       | Amherst Capital      |

### 2019 - Year to Date

19,525.076

## SOURCES

The third-party Information set forth herein may be derived from any of the following sources:

|   |                                |
|---|--------------------------------|
| Bloomberg                                 | National Real Estate Investor  |
| CBRE Capital Markets                      | Real Capital Analytics         |
| Citibank Research                         | REIS                           |
| Commercial Mortgage Alert                 | Trepp Information Systems      |
| CoStar                                    | US Bureau of Economic Analysis |
| CRE Direct                                | US Bureau of Labor Statistics  |
| FHLMC                                     | US Census Bureau               |
| International Council of Shopping Centers | US Federal Reserve             |
| Intex Solutions                           | US Treasury                    |
| Morningstar Research                      | Wells Fargo Research           |
| Moody's / RCA CPPI                        |                                |

*We do not make any representation regarding the accuracy or completeness of the information contained herein. In addition, the information contained herein may include forward-looking statements. Actual events are difficult to predict, may differ from those assumed herein, and will be beyond our control. Any forward-looking statement included herein is based on information available on the date hereof and we do not assume any duty to update any such statement. Some important factors which could cause actual results to differ materially from those in any forward-looking statements include the actual defaults on the collateral, the timing of any defaults and subsequent recoveries, changes in interest rates and any weakening of the specific credits included in the collateral, among others. The information contained herein is for informational purposes only and does not constitute a solicitation to buy, sell, or take any investment action, nor should it be considered investment, legal, regulatory, accounting or tax advice. Please consult with legal, tax, accounting, or other necessary professionals prior to entering into any transaction based on the information contained herein. Investment decisions made by you based on this information may not always be profitable.*