COVID-19 and U.S. CRE Property & Transaction Markets
Agenda

1. Welcoming Remarks
2. COVID-19 – The Potential Effects on the U.S. Economy
3. COVID-19 – The Potential Effects on the CRE Sectors
4. Questions & Answers
Welcoming Remarks

Cristina Pieretti, Managing Director | Head of REIS
Moody’s Analytics
COVID-19 – The Potential Effects on the U.S. Economy

Cris deRitis PhD, Deputy Chief Economist
Moody’s Analytics
U.S. Case Trajectory at a Turning Point

Number of COVID-19 cases, days since 100 confirmed cases

Sources: Johns Hopkins CSSE COVID-19 Data Repository; Moody’s Analytics
COVID-19 Economic Transmission Channels

1. Tourism/Leisure/Hospitality
2. Trade
3. Commodity prices
4. Financial markets
5. Confidence

Combination of Supply and Demand Shocks Complicates Forecasts
COVID-19 Impact on Restaurants

Seated dinners, % change year ago

Sources: OpenTable; Moody’s Analytics
### COVID-19 Scenarios (as of March 2020)

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Probability Actual Outcome is Worse</th>
<th>New Infections Peak</th>
<th>Mortality Rate</th>
<th>Hospitalization Rate</th>
<th>Infections Abate By</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline Scenario</td>
<td>15%</td>
<td>March</td>
<td>1.5%</td>
<td>4-5%</td>
<td>June</td>
</tr>
<tr>
<td>Critical Pandemic Scenario</td>
<td>45%</td>
<td>March</td>
<td>2%</td>
<td>4-5%</td>
<td>June</td>
</tr>
<tr>
<td>Severe Pandemic Scenario</td>
<td>35%</td>
<td>April</td>
<td>2%</td>
<td>5-6%</td>
<td>July</td>
</tr>
</tbody>
</table>
COVID-19 Scenarios Follow Varying Assumptions

Real GDP, annualized quarter/quarter growth rate, March 2020 Forecast Vintage

Sources: BEA; Moody’s Analytics
Large States & Coastal Areas Face Greater Risk

Average Z-score across rankings, 0=state average

Source: Moody's Analytics
COVID-19 – The Potential Effects on the CRE Sectors

Victor Calanog PhD, Head of CRE Economics
Moody’s Analytics
The Front Lines

Share of Leisure and Hospitality Employment

Source: Moody's Analytics

Largest WeWork Leases Relative to Metro Inventory

Source: Moody’s Analytics REIS; CompStak
Volatility & Transaction Markets

- Three periods (2008Q4, 2011Q3, and 2016Q4) result in a marked effect on transaction markets.
- Volume may drop anywhere from 20 to 40% during volatile periods.
- Longer recovery if this turns into a full-blown protracted recession.

Source: Moody's Analytics REIS
Pandemic & Protracted Slump | Multifamily

- Baseline expected a record high in terms of deliveries for 2020: over 300,000 new units.
- Severe pandemic and protracted slump scenarios produce an increase in vacancies, but construction pullback is a countervailing effect.

Source: Moody’s Analytics REIS
Pandemic & Protracted Slump | Multifamily

- Historical reaction functions to downturns determine the relative focus and magnitude of distress in various property types and geographic markets.

- Recent record of oversupply will position any geographic market for distress, if demand pulls back abruptly (as per a severe pandemic or protracted slump scenario).

- Recent record of poor performance, particularly when vacancies have been rising and/or rent growth has been moderating, suggests markets will not fare as well in a downturn.

- New York and San Francisco display stable vacancies, but volatile rent growths: effective rents may fall by 5 to 10% in a protracted slump.

### Table: Multifamily Vacancy & Rent Performance

<table>
<thead>
<tr>
<th>MSA</th>
<th>State</th>
<th>Year</th>
<th>Vacancy Change (bps)</th>
<th>Vacancy Level</th>
<th>Effective Rent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tucson</td>
<td>AZ</td>
<td>2020</td>
<td>387</td>
<td>8.0%</td>
<td>-2.6%</td>
</tr>
<tr>
<td>New Orleans</td>
<td>LA</td>
<td>2020</td>
<td>366</td>
<td>8.0%</td>
<td>-3.0%</td>
</tr>
<tr>
<td>Greenville</td>
<td>SC</td>
<td>2020</td>
<td>330</td>
<td>8.9%</td>
<td>-2.8%</td>
</tr>
<tr>
<td>Charlotte</td>
<td>NC</td>
<td>2020</td>
<td>326</td>
<td>9.7%</td>
<td>-3.5%</td>
</tr>
<tr>
<td>Tacoma</td>
<td>WA</td>
<td>2020</td>
<td>319</td>
<td>6.0%</td>
<td>-3.9%</td>
</tr>
</tbody>
</table>

Source: Moody’s Analytics REIS
Office & Retail Do Not Fare as Well

Office Fundamentals | Protracted Slump

Retail Fundamentals | Protracted Slump

Source: Moody’s Analytics REIS
### Industrial Markets | Various Drivers

<table>
<thead>
<tr>
<th>MSA</th>
<th>State</th>
<th>Year</th>
<th>Inventory Growth</th>
<th>Vacancy Change (bps)</th>
<th>Vacancy Level</th>
<th>Effective Rent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Bernardino/Riverside</td>
<td>CA</td>
<td>2020</td>
<td>19.4%</td>
<td>314</td>
<td>12.4%</td>
<td>-5.0%</td>
</tr>
<tr>
<td>Dallas</td>
<td>TX</td>
<td>2020</td>
<td>17.1%</td>
<td>314</td>
<td>15.1%</td>
<td>-5.3%</td>
</tr>
<tr>
<td>Kansas City</td>
<td>MO</td>
<td>2020</td>
<td>15.5%</td>
<td>313</td>
<td>12.2%</td>
<td>-5.8%</td>
</tr>
<tr>
<td>Orlando</td>
<td>FL</td>
<td>2020</td>
<td>13.7%</td>
<td>317</td>
<td>14.7%</td>
<td>-5.5%</td>
</tr>
<tr>
<td>Fort Worth</td>
<td>TX</td>
<td>2020</td>
<td>12.6%</td>
<td>312</td>
<td>14.1%</td>
<td>-7.8%</td>
</tr>
</tbody>
</table>

Source: Moody's Analytics REIS
Questions & Answers
Thank You
To the extent permitted by law, MOODY’S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability for any direct or indirect compensatory losses or damages caused to any person or entity, including but not limited to any negligence (but excluding fraud, willful misconduct or any other type of liability that, for the avoidance of doubt, by law cannot be excluded) on the part of, or any contingency within or beyond the control of, MOODY’S or any of its directors, officers, employees, agents, representatives, licensors or suppliers, arising from or in connection with the information contained herein or the use of or inability to use any such information.

NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY CREDIT RATING, ASSESSMENT, OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY’S IN ANY FORM OR MANNER WHATSOEVER.

MOODY’S Investors Service, Inc., a wholly-owned credit rating agency subsidiary of Moody’s Corporation (“MCO”), hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by Moody’s Investors Service, Inc. have, prior to assignment of any credit rating, agreed to pay to Moody’s Investors Service, Inc. for credit ratings opinions and services rendered by it fees ranging from $1,000 to approximately $2,700,000. MCO and Moody’s Investors Service also maintain policies and procedures to address the independence of Moody’s Investors Service credit ratings and credit rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold credit ratings from Moody’s Investors Service and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at www.moodys.com under the heading “Investor Relations — Corporate Governance — Director and Shareholder Affiliation Policy.”

Additional terms for Japan only: Any publication into Australia of this document is pursuant to the Australian Financial Services License of Moody’s affiliate, Moody’s Investors Service Pty Limited ABN 61 003 399 657AFSL 336969 and/or Moody's Analytics Australia Pty Ltd ABN 94 105 136 972 AFSL 385369 (as applicable). This document is intended to be provided only to “wholesale clients” within the meaning of section 761G of the Corporations Act 2001. By continuing to access this document from within Australia, you represent to MOODY’S that you are, or are accessing the document as a representative of, a “wholesale client” and that neither you nor the entity you represent will directly or indirectly disseminate this document or its contents to retail clients within Australia. MOODY’S credit rating is an opinion as to the creditworthiness of a debt obligation of the issuer, not on the equity securities of the issuer or any form of security that is available to retail investors.

Additional terms for Japan only: Moody's Japan K.K. (“MKJ”) is a wholly-owned credit rating agency subsidiary of Moody’s Group Japan K.K., which is wholly-owned by Moody’s Overseas Holdings Inc., a wholly-owned subsidiary of MCO. Moody’s SF Japan K.K. (“MSFJ”) is a wholly-owned credit rating agency subsidiary of MJK. MSFJ is not a Nationally Recognized Statistical Rating Organization (“NRSRO”). Therefore, credit ratings assigned by MSFJ are Non-NRSRO Credit Ratings. Non-NRSRO Credit Ratings are assigned by an entity that is not a NRSRO and, consequently, the rated obligation will not qualify for certain types of treatment under U.S. laws. MKJK and MSFJ are credit rating agencies registered with the Japan Financial Services Agency and their registration numbers are FSA Commissioner (Ratings) No. 2 and 3 respectively.

MKJK or MSFJ (as applicable) hereby disclose that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by MKJK or MSFJ (as applicable) have, prior to assignment of any credit rating, agreed to pay to MKJK or MSFJ (as applicable) for credit ratings opinions and services rendered by it fees ranging from JPY125,000 to approximately JPY250,000,000.

MKJK and MSFJ also maintain policies and procedures to address Japanese regulatory requirements.