Investment appraisals – allowing for density metrics
Vanessa Muscarà, M&G Real Estate, Property Research Team
26th October 2016
Mega trends: Urbanisation
Supply of new housing is not keeping up with population growth

Consistent trend throughout European cities

Source: United Nations, national statistics agencies, IPD, Bulwien, Nationwide
Mega trends: Globalisation

The cost of delivering one megabyte wirelessly has dropped from $8 to a few cents

By 2020
80% of adults will have a supercomputer in their pocket

Source: The Economist, March 2015
Densification: what does this mean for real estate investors?

Source: Urban Land Institute, June 2015

Which cities advocate ‘good density’ practices?
Good Density:
Innovation
Good density: Innovation
Cities that capture growth from innovation

INNOVATIVE CITIES RANKING – TOP 20

- Eindhoven
- Dortmund
- Espoo
- Munich
- Paris
- Zurich
- Geneva
- Helsinki
- Cambridge
- The Hague
- Stuttgart
- Hannover
- Arhus
- Brussels
- Dusseldorf
- Mannheim
- Milan
- Luxembourg
- Luxembourg
- Frankfurt
- Stockholm

Innovative workforce (standardised score)

Source: PMA, EPO, Eurostat, World Bank, QS
Rental growth vs innovative workforce

Average rental growth (2005-2015)

Innovative workforce (standardised score)

High innovation/high growth markets

Low innovation/low growth markets

Source: PMA, EPO
Yield vs innovative workforce

Investors are pricing in rental growth expectations

Source: PMA, EPO
Good Density: Connectivity
Good density: Connectivity
Cities that capture growth from urban mobility

CONNECTIVITY SCORE MAP: 64 CITIES STUDIED

The darker the colour the higher the connectivity score

CONNECTIVITY RANKING – TOP 20

<table>
<thead>
<tr>
<th>CITY</th>
<th>RANK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paris</td>
<td>1</td>
</tr>
<tr>
<td>Berlin</td>
<td>2</td>
</tr>
<tr>
<td>Stuttgart</td>
<td>3</td>
</tr>
<tr>
<td>Zurich</td>
<td>4</td>
</tr>
<tr>
<td>Stockholm</td>
<td>5</td>
</tr>
<tr>
<td>Amsterdam</td>
<td>6</td>
</tr>
<tr>
<td>Munich</td>
<td>7</td>
</tr>
<tr>
<td>London</td>
<td>8</td>
</tr>
<tr>
<td>Bremen</td>
<td>9</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>10</td>
</tr>
<tr>
<td>Hamburg</td>
<td>11</td>
</tr>
<tr>
<td>Lyon</td>
<td>12</td>
</tr>
<tr>
<td>Vienna</td>
<td>13</td>
</tr>
<tr>
<td>Malmo</td>
<td>14</td>
</tr>
<tr>
<td>Barcelona</td>
<td>15</td>
</tr>
<tr>
<td>Dublin</td>
<td>16</td>
</tr>
<tr>
<td>Rotterdam</td>
<td>17</td>
</tr>
<tr>
<td>Frankfurt am Main</td>
<td>18</td>
</tr>
<tr>
<td>Copenhagen</td>
<td>19</td>
</tr>
<tr>
<td>Gothenburg</td>
<td>20</td>
</tr>
</tbody>
</table>

Source: M&G Real Estate (October’16).
Identifying value beyond traditional gateway markets

Source: M&G Real Estate, October ’16
Connectivity ranking metrics
Cities with enabler & effect scores > 50 more likely to provide sustainable property fundamentals

**Enablers**
- Wi-fi speed
- Free hotspots
- % of journeys to work using green modes
- Length of dedicated cycle paths
- Transit web apps
- Urban mobility strategy
- Infrastructure spend
- Electric vehicle chargers
- Car sharing schemes

**Effects**
- Affordability
- Transport emissions
- Passenger satisfaction
- Awards
- Public transport speed
- Commute time to work
- Hours spent in traffic
- Safety & security

- High density cities score relatively higher on Enablers
- Low density cities score relatively higher on Effects

Source: M&G Real Estate PRT October ’16.
Investment appraisals
Allowing for density metrics
**Investment appraisals**

Allowing for density metrics

---

### Deal XYZ

**Q2’16 Fund Specific Model Portfolio: Alternative Scenario**

<table>
<thead>
<tr>
<th>Segment</th>
<th>Current Fund Exposure</th>
<th>Current Fund Bet</th>
<th>MIP’s Model Portfolio Target</th>
<th>Required Movement to Achieve Target</th>
<th>Structural Recommendation</th>
<th>Expectation of Relative Return</th>
<th>Yr 1</th>
<th>Yr 2</th>
<th>Yr 3</th>
<th>Yr 4</th>
<th>Yr 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>City XYZ</td>
<td>PRT Q2</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td>FM</td>
<td></td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td>Prime Yields (%)</td>
<td>Exit</td>
<td>SR</td>
<td>LR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City XYZ</td>
<td>PRT/ULL Q2</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td>FM</td>
<td></td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
</tbody>
</table>

**PRT Forecasts vs. FM Appraisal Assumptions**

<table>
<thead>
<tr>
<th>Nominal Rental Growth (%)</th>
<th>YR1</th>
<th>YR2</th>
<th>YR3</th>
<th>YR4</th>
<th>YR5</th>
<th>LR</th>
</tr>
</thead>
<tbody>
<tr>
<td>City XYZ</td>
<td>PRT Q2</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td>FM</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
</tbody>
</table>

**Relative Fund Weightings**

<table>
<thead>
<tr>
<th>Q2 2016 Strategy</th>
<th>Before Acquisition %</th>
<th>After Acquisition %</th>
<th>PRT Target %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offices</td>
<td>XX</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Offices Country</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td>Country</td>
<td>XX</td>
<td>XX</td>
<td></td>
</tr>
</tbody>
</table>

**Density metrics: percentile rankings**

<table>
<thead>
<tr>
<th>City XYZ</th>
<th>Innovation</th>
<th>Connectivity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>XX</td>
<td>XX</td>
</tr>
</tbody>
</table>

---

Source: M&G Real Estate, Q2 16, Note: In Other includes Poland and Czech Republic
For Addressee only; not for further distribution

The distribution of this document does not constitute an offer or solicitation and is not for further distribution.

This document is designed to provide factual information about the organisation for the sole and exclusive use of persons to whom it is addressed and may not be passed on to any other person. Information given in this document has been obtained from, or based upon, sources believed by us to be reliable and accurate although M&G does not accept liability for the accuracy of the contents. M&G does not offer investment advice or make recommendations regarding investments. Opinions are subject to change without notice.

M&G Real Estate Limited is registered in England and Wales under number 3852763 with its registered office at Laurence Pountney Hill, London EC4R 0HH. M&G Real Estate Limited forms part of the M&G Group of companies.