DATA SOURCES FOR TRANSACTIONS AND APPRAISALS. PRACTICAL CHALLENGES/DIFFICULTIES

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CPPI HANDBOOK 2ND DRAFT CHAPTER 8

PREPARATION OF AN INTERNATIONAL HANDBOOK ON COMMERCIAL PROPERTY PRICE INDICATORS

Frankfurt, 29-30 September 2014
• Commercial property market is thin.
  – Few transactions.
  – Heterogeneity is much stronger.
  – Especially in comparison with the housing market.
• Practical problems relating to data highly likely.
  – Not being able to obtain enough transactions to construct an index.
  – Not enough sufficiently detailed information to perform quality adjustment.
    • And technical facilities more important for commercial property e.g. IT infrastructure.
<table>
<thead>
<tr>
<th><strong>Registrations of transactions when ownership changes.</strong></th>
<th><strong>Appraisals that give an assessment of value.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Should give verifiable transaction or market price.</td>
<td>Administrative systems e.g. valuations revenue authorities for taxation purposes or by companies for annual accounts.</td>
</tr>
<tr>
<td>Indices so derived are referred to as <em>transaction-based</em> indices.</td>
<td>Valuations for other specific purposes.</td>
</tr>
<tr>
<td></td>
<td>Not generally purpose designed for constructing “official” CPPIs &amp;/or other Indicators.</td>
</tr>
<tr>
<td></td>
<td>Indices, so derived, are referred to as <em>appraisal-based</em> indices.</td>
</tr>
</tbody>
</table>
EXISTING INDICES: THE CONSTRAINTS OF DATA

- Data limitations can have repercussions for conceptual basis of index.
- For most official purposes, the target or ideal index is one that is based on transaction prices.
- Few National Statistical Offices compile CPPIs e.g.
  - *Statistics Denmark* computes quarterly Index using SPAR (Sale Price Appraisal Ratio) method.
    - Uses *sales data* from an electronic land registration system.
  - *ECB* computes interim indices based on *appraisal prices supplemented by better national data* where the latter exist.
  - *Hong Kong* uses *repeat sales* methodology (transparent and highly liquid property market).
EXISTING INDICES: THE CONSTRAINTS OF DATA & IMPACT ON CONCEPTUAL BASIS

- Investment perspective is relevant for the role that the CPPI may play in the oversight of the financial system...........but
  - Different from the real asset perspective taken from national accounting & official statistics purposes.

- Most compilers of official statistics look to national accounts.
  - For most official purposes, target index is based on transaction prices.
    - A CPPI follows the acquisitions approach where the index reflects the transaction price when the property is acquired.
    - i.e. the price paid when the ownership is transferred.
EXISTING INDICES: THE CONSTRAINTS OF DATA & IMPACT ON CONCEPTUAL BASIS

- Potential to use appraisals as a proxy for market prices.
  - Subject to appropriate protocols relating to basis of valuations.
  - Some indices compiled using a combination of transactions and appraisals.
- ..........and some other positive properties.
  - Appraisals based on transaction price evidence.
  - Often share same goal of tracking movements in market prices.
  - Can track same properties (but quality adjustment may be needed).
TRANSACTIONS: PRACTICAL DATA-RELATED DIFFICULTIES

- A lack of transparency.
  - From complexities in sale contracts.
    - Transfers of commercial property can be very intricate.
      - Leasehold/freehold; shared facilities; parts of building.
      - Or from the evasion of duties imposed by revenue authorities.
    - Complication factors such as the existence of tenancy agreements, and planning consent for redevelopment etc., can impact on expected future returns & affect transaction price.
      - These factors may not always be recorded along with the price in official registries etc.

- A lack of timely data from a transparent source that can be independently verified.
  - Official data on transaction prices can be difficult to obtain.
  - The sale of a commercial property may not be registered until some months after the sale.
  - The recorded price cannot be verified independently as to whether it was the actual transaction price (previous slide refers).
    - Reliance on policing of administrative system.
TRANSACTIONS: PRACTICAL DATA-RELATED DIFFICULTIES

- Small numbers of transactions.
  - The buying and selling of commercial property can be relatively infrequent.
  - Limits the use of data source in compiling frequent indices (quarterly, monthly etc.), particularly in smaller commercial property markets.

- Methods for dealing with small sample sizes in this context are discussed in Chapters 5 & 6.
TRANSACTIONS: PRACTICAL DATA-RELATED DIFFICULTIES

- Commercial properties are relatively heterogeneous.

- Requires mechanisms to ensure a property price index tracks the prices of like-for-like properties over time.
  - Low numbers of transactions and limited information on the properties being transacted can preclude traditional quality adjustment methods to account for the change in the mix of properties sold.

- Practical difficulties often lead to a lack of observable prices in consecutive periods.
  - Needed to facilitate the computation of an index that is not confounded by.
    - Lack of data.
    - Changes in the different mixes of commercial properties and property characteristics entering the index at each computation.

- Methodologies for dealing with such inadequacies exist.
  - As long as the transactions don’t completely dry up during market down-turns.

- Methodologies are referred to in earlier chapters.
## Classification of property

<table>
<thead>
<tr>
<th>Statistics Denmark</th>
<th>Hong Kong</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Mixed (residential and business). Business use has to be at least 25%.</td>
<td>• Offices.</td>
</tr>
<tr>
<td>• Business only.</td>
<td>• Retail.</td>
</tr>
<tr>
<td>• Factories and warehouses.</td>
<td>• Industrial</td>
</tr>
<tr>
<td>• Agriculture (but excludes corporate sales).</td>
<td></td>
</tr>
</tbody>
</table>

## Price data & index construction

<table>
<thead>
<tr>
<th>Statistics Denmark</th>
<th>Hong Kong</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Price recorded in Land Registration System.</td>
<td>• Price recorded in Agreement of Sale &amp; Purchase.</td>
</tr>
<tr>
<td>• SPAR method: ratio of purchase price to appraisal value.</td>
<td>• Price per “saleable” floor area.</td>
</tr>
<tr>
<td>• Excludes “atypical” sales/properties e.g. Where sold by local authority or where bundle of properties sold.</td>
<td>• Repeat sales.</td>
</tr>
<tr>
<td></td>
<td>• Quality adjusted by rateable (rental) value (similar to SPAR).</td>
</tr>
<tr>
<td></td>
<td>• All leasehold.</td>
</tr>
</tbody>
</table>
**TRANSACTIONS: OTHER DATA-RELATED ISSUES**

- Transaction-based indices cheaper to develop.
  - Extract transaction price from readily available database.
- Appraisers rely on transaction price evidence to estimate “market value.”
  - But numbers and timeliness of transactions and lack of detailed information on properties transacted, can confound situation beyond the capabilities of available statistical techniques.
  - For these reasons appraisal-based indices can prevail even though not the preferred approach for constructing official statistics.
  - Appraisal-based indices can overcome some of the difficulties associated with transaction-based indices.

- Typical problems relating to administrative data.
- Lack of harmonisation.
  - Extent of non-comparability not known.
- Lack of international accepted guidelines on coverage, methodology, classifications.
VALUATIONS: PRACTICAL DATA-RELATED DIFFICULTIES

- Obtained from.
  - Existing administrative systems.
    - E.g. where valuations are undertaken by tax authorities as a basis for levying taxes or by corporations for filing company accounts.
  - Special data gathering exercises carried out for specific purpose of computing an index.
  - Valuations undertaken for portfolio management or for providing collateral against a bank loan, or for internal accounting between different parts of a business.
    - Can be infrequent and are often unregulated.
VALUATIONS: ADMINISTRATIVE SYSTEMS

- User has limited influence over the composition of data. For example.
  - Definitions.
  - Collection of supplementary information.
    - Required for index computation but not for collection of taxes. E.g. price-determining characteristics for computing “constant quality” price index
    - Can represent an expert and objective judgement on how much a property would sell.
    - If undertaken regularly can avoid collection costs of customised data collection.
    - Potential data source for exploitation at minimal cost.

- Access to relevant datasets may be limited.
- Infrequent and subject to significant time-lags.
SYSTEMATIC VALUATIONS

Valuations undertaken specifically for price index used to benchmark changes in commercial property values and for constructing appraisal-based indices as substitutes for transaction-based indices.

- Custom-designed for the specific purpose of producing a CPPI.
  - Should avoid some pitfalls associated with use of administrative data.
  - Definitions, survey design and quality assurance of the data are more under the control of collection agent.

- Lack of international guidelines relating for valuations.
  - Valuations undertaken for specific purposes e.g. submission of a tax return - may operate within guidelines laid down by Government/professional body but can vary between countries.
    - Same for official CPPIs.
  - Rely on judgement.
  - Can be differences between one set of valuations and another.
### COMMERCIAL VALUATIONS

<table>
<thead>
<tr>
<th>Valuations collected by commercial data suppliers for portfolio management &amp; for collateral</th>
</tr>
</thead>
<tbody>
<tr>
<td>✅ Private sector organisations collect detailed data on commercial properties (prices, property characteristics, property condition etc.) &amp; compute various indicators.</td>
</tr>
<tr>
<td>✅ E.g. valuations, investment return, and rent per m² etc.</td>
</tr>
<tr>
<td>✅ Surveyors estimate the potential future return from an asset as well as the value of the property itself.</td>
</tr>
<tr>
<td>✅ Can be frequent and cover major markets in depth.</td>
</tr>
<tr>
<td>✅ Index compilers have the potential to control for the mix of properties within each market.</td>
</tr>
<tr>
<td>✅ Data available for different property sectors such as the retail, office, industrial and commercial residential sectors etc.</td>
</tr>
<tr>
<td>Valuations collected by commercial data suppliers for portfolio management &amp; for collateral</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>• Unlikely to be free of charge.</td>
</tr>
<tr>
<td>• Collected to meet <strong>specific</strong> requirements of professional portfolio managers.</td>
</tr>
<tr>
<td>• Unlikely to fully align with the statistical requirements of NSIs.</td>
</tr>
<tr>
<td>• Coverage may be limited to professionally managed property portfolios only.</td>
</tr>
<tr>
<td>• Generally focused on those properties, which fall within the professionally managed property sector, no representative samples of the universe of properties or transactions.</td>
</tr>
<tr>
<td>• Concepts can vary.</td>
</tr>
<tr>
<td>• Valuation rules and guidelines can vary considerably from one country to another as well as between individual surveyors within a country.</td>
</tr>
<tr>
<td>• Confounds international comparisons or index aggregation.</td>
</tr>
<tr>
<td>• Some indices “self-reported”.</td>
</tr>
<tr>
<td>• In USA, some valuations by internal done by the funds themselves.</td>
</tr>
</tbody>
</table>
Valuations for the financing or re-financing of commercial property.

- Valuation rules insufficient to entirely overcome pressure on appraisers to bias appraisals toward valuations that support the lending transactions.
  - Unless appraisers hired by independent agencies.
    - Adds to the range of uncertainty around some valuations, depending on the purpose and motivation.
    - A “95% confidence range” is of the order +/- 20% of the property value.
  - Valuations over-influenced by past prices resulting in smoothed index (generic to appraisal-based indices).
    - Not so good at identifying turning points.
  - The potential for compiling indices depends on statutory and industry information standards requirements.
VALUATIONS: SUMMARY

- Computation depends on purpose.
- Lack of harmonisation.
- The potential for compiling indices depends on statutory and industry information standards requirements.
  - These can vary between and within countries.
## Commercial Property Price Indices: Data for Weights

- Most indices are transaction-weighted rather than stock-weighted.
  - Conceptual basis of a CPPI should determine weights.
    - Monitoring commercial property inflation experienced by purchasers - use transaction prices and weights based on value of transactions.
    - Valuing commercial property stock for wealth measurement and measuring indebtedness - use value of commercial property stock.
  - Data on stock obtained from land registry or a census of commercial property.
  - Data on transactions obtained from land registry.
    - Re-weight if transactions not representative of stock.
  - A more detailed discussion in Chapter 4.
  - Index calculation more sensitive to prices.
DATA RELATING TO LAND PRICES/VALUES

- Data sources same as for commercial buildings.
  - Land Registries, tax office records, valuation offices, other valuers, real estate agents, local municipalities.
  - But the availability of data on land prices is relatively sparse (more so than for residential property or for commercial buildings).
    - Not always accessible.

- Characteristics of all data sources.
  - Plots of identical size in same location can vary in price e.g. if one plot being sold for house construction has a nice view and another doesn’t.
  - Need relatively prescriptive descriptions (transactions & valuations).
  - Need to convert to a unit values e.g. price per hectare.
DATA RELATING TO LAND PRICES/VALUES: CONTINUED

- For a “transactions” database.
  - More records relating to land prices in rural areas than in urban areas due to scarcity of urban land.
  - Sample sizes are likely to be small at and below the regional level, and for different types of land use.

- Problems of interpretation.
  - Transactions can be speculative - anticipating a change in use.
  - International comparisons confounded by absence of land use information and a lack of an internationally agreed classification.
  - Freehold versus leasehold properties (long-term ground leases) is an added complication.
OVERALL CONCLUSIONS

- Prominent practical problems relating to *transaction data*.
  - Few transactions.
  - Not being able to sufficiently perform quality adjustment.
    - Heterogeneity & lack of detailed information.
  - Limited transparency.

- Also prominent problems with *valuation data*.
  - Collected for a variety of purposes.
    - Monitoring of property prices, portfolio valuations, taxation.
    - Valuation protocols vary.
  - Transaction-based & appraisal-based indices all generally trying to obtain market value: subject to appropriate measurement protocols.
OVERALL CONCLUSIONS

STATUS OF AVAILABLE INDICES & COMPARABILITY ISSUES ARISING:

COMPARABLE, AGREED PROTOCOLS = √
NON-COMPARABLE, NO AGREED PROTOCOLS = X
UNCLEAR = ?

<table>
<thead>
<tr>
<th></th>
<th>Transactions</th>
<th>Valuations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coverage</td>
<td>?</td>
<td>X</td>
</tr>
<tr>
<td>Classifications</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Protocols for</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>recording &quot;market&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>price</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index methodology</td>
<td>✓</td>
<td>X</td>
</tr>
</tbody>
</table>

International protocols needed
<table>
<thead>
<tr>
<th>Survey</th>
<th>Organisation</th>
<th>Use</th>
<th>Source</th>
<th>Coverage</th>
<th>Frequency</th>
<th>Availability*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan Commercial Property Price Index</td>
<td>Ministry of Land, Infrastructure, Transport and Tourism</td>
<td>Office, Retail, Logistics, Hotel and Land</td>
<td>Transaction price</td>
<td>All Japan</td>
<td>Quarterly</td>
<td>2008</td>
</tr>
<tr>
<td>Land Market Value Publication</td>
<td>Ministry of Land, Infrastructure, Transport and Tourism</td>
<td>Land for commercial, residential and industrial real estate</td>
<td>Appraisal value</td>
<td>All Japan</td>
<td>Annual</td>
<td>1970</td>
</tr>
<tr>
<td>Urban Land Price Index</td>
<td>Japan Real Estate Institute</td>
<td>Land for commercial, residential and industrial real estate</td>
<td>Appraisal value</td>
<td>223 cities</td>
<td>Biannual</td>
<td>1936</td>
</tr>
<tr>
<td>ARES Japan Property Index</td>
<td>The Association For Real Estate Securitization</td>
<td>Office, Residential, Retail, Logistics, Hotel and others</td>
<td>Net income and capital value</td>
<td>J-REIT Funds + Unlisted Funds</td>
<td>Monthly</td>
<td>2001</td>
</tr>
<tr>
<td>IPD Japan Monthly Property Index</td>
<td>IPD: Investment Property Databank</td>
<td>Office, Residential, Retail, Logistics, Hotel and others</td>
<td>Net income and capital value</td>
<td>J-REIT Funds + Unlisted Funds</td>
<td>Monthly</td>
<td>2001</td>
</tr>
<tr>
<td>JREI Office Index (JOIX)</td>
<td>Japan Real Estate Institute</td>
<td>Office</td>
<td>Estimated net income and capital value</td>
<td>13 major cities</td>
<td>Biannual</td>
<td>2002</td>
</tr>
<tr>
<td>MUTB-CBRE Real Estate Investment Index</td>
<td>Mitsubishi UFJ Trust and Banking Corporation &amp; CB Richard Ellis</td>
<td>Office</td>
<td>Estimated net income and capital value</td>
<td>13 major cities</td>
<td>Annual</td>
<td>1970-2010</td>
</tr>
<tr>
<td>Sumitomo Trust Property Index (STIX)</td>
<td>The Sumitomo Trust and Banking &amp; STB Research Institute</td>
<td>Office</td>
<td>Estimated net income and capital value</td>
<td>Tokyo and Osaka</td>
<td>Annual</td>
<td>1976-2008</td>
</tr>
<tr>
<td>Farmland Value And Rent Survey</td>
<td>Japan Real Estate Institute</td>
<td>Farmland</td>
<td>Transaction price and rent (based on survey)</td>
<td>All Japan</td>
<td>Annual</td>
<td>1913</td>
</tr>
<tr>
<td>Timberland Value Survey</td>
<td>Japan Real Estate Institute</td>
<td>Timberland</td>
<td>Transaction price (based on survey)</td>
<td>All Japan</td>
<td>Annual</td>
<td>1940</td>
</tr>
</tbody>
</table>

*Availability means that the data is available from this year.
JAPAN

ARES Japan Property Index :Office
IPD Japan Monthly Property Index:Office
JOIX :Office
OTHER COMMERCIAL PROPERTY INDICATORS: CONCLUSIONS

- Other indicators also important.
  - Commercial land prices (not often compiled, lack of data).
  - Office rents per m2.
  - Derived variables.
    - Net or Gross Debt as a percentage of Net Asset Value; Capital value-to-GDP ratio; capital value-to-private consumption ratio; capital value-to-employment ratio; capital value-to-rent ratio yield average.

Similar challenges.
<table>
<thead>
<tr>
<th>Survey</th>
<th>Organisation</th>
<th>Use</th>
<th>Source</th>
<th>Coverage</th>
<th>Frequency</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Office and Apartment Rent Index</td>
<td>Japan Real Estate Institute</td>
<td>Office and residential</td>
<td>Appraisal rental value</td>
<td>All Japan</td>
<td>Annual</td>
<td>1995</td>
</tr>
<tr>
<td>Retail Rent Trend</td>
<td>Japan Real Estate Institute and BAC Urban Projects</td>
<td>Retail</td>
<td>Asking rent</td>
<td>9 major cities</td>
<td>Biannual</td>
<td>2008</td>
</tr>
<tr>
<td>The Japanese Real Estate Investor Survey</td>
<td>Japan Real Estate Institute</td>
<td>Office, Residential, Retail, Logistics and Hotel</td>
<td>Yield (based on survey)</td>
<td>Tokyo + 13 major cities</td>
<td>Biannual</td>
<td>1999</td>
</tr>
<tr>
<td>Assumed Achievable Rent</td>
<td>CBRE Japan</td>
<td>Office</td>
<td>Assumed achievable rent</td>
<td>Tokyo, Osaka and Nagoya</td>
<td>Quarterly</td>
<td>2005</td>
</tr>
<tr>
<td>Vacancy and Asking Rent</td>
<td>CBRE Japan</td>
<td>Office</td>
<td>Vacancy and asking rent</td>
<td>Tokyo + 14 major cities</td>
<td>Quarterly</td>
<td>1996</td>
</tr>
<tr>
<td>Vacancy and Asking Rent</td>
<td>CBRE Japan</td>
<td>Logistics</td>
<td>Vacancy and asking rent</td>
<td>16 prefectures</td>
<td>Quarterly</td>
<td>2001</td>
</tr>
<tr>
<td>Rent Diffusion Index</td>
<td>Xymax Real Estate Institute</td>
<td>Office</td>
<td>Contract rent</td>
<td>Tokyo</td>
<td>Annual</td>
<td>2000</td>
</tr>
<tr>
<td>Implied Cap Rate</td>
<td>Sumitomo Mitsui Trust Research Institute</td>
<td>Office, Residential, Retail, Logistics, Hotel and others</td>
<td>Net income, market value of debt and equity</td>
<td>J-REIT market</td>
<td>Weekly</td>
<td>2005</td>
</tr>
</tbody>
</table>

*Availability means that the data is available from this year.
IPD (INVESTMENT PROPERTY DATABANK LTD)

- Most of IPD's CPPIs are based on valuations.
- Also compile *Property Fund Indices*.
  - Show total returns investors have received and can expect to receive from their unlisted fund investments.
  - Based on objective reports on fund returns computed on a like-for-like basis, i.e. following a pre-defined common set of objective rules or conventions, irrespective commercial pressure.
  - Complement supplementary indices compiled for analytical purposes relating to total return, income return and capital growth.

- Have been researching Transaction Linked Indices (TLIs).
  - Compare prices from transactions completed in the market place with previous valuations for those same assets.
  - Sale prices for properties that have sold in each period are regressed on to preceding valuations.
  - A set of dummy variables indicates location & property type.
  - Regression coefficients are used to conduct a mass appraisal of all unsold assets to compute predicted price.
  - Predicted prices in complimentary quarters gives a transaction linked and value-weighted estimate of capital growth.

Similar to the SPAR method used by Statistics Denmark.
Thank you!

Comments to: David Fenwick - fenwickabuja@yahoo.com