



## Israel IVS Forum

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# International Views and Approaches Real Estate Indexes

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One of the main objectives of the Israel IVS Forum is to develop a commercial property index for Israel, as exists in the advanced real estate markets in the world since the 1980s. These indexes allow investors to compare performance across different asset managers, different real estate sectors and with other investment markets such as those for equity and bonds. They enhance transparency in the market and therefore attract FDI inflows, which currently are almost non-existent in the Israeli market for direct commercial property holdings. Furthermore, an index would allow investment managers to compare their performance with their competitors and analyse the performance of their own portfolio managers and reimburse them accordingly. For academic researchers they allow for a broad range of research such as the correlation between the index and overall macro performance of the economy. In short, commercial property indexes support the efficient operation of the markets. Developing an index is therefore in the joint interest of economic policymakers, market regulators, institutional investors such as insurance companies and pension funds and fund managers.

Professor Steven Devaney of Henley Business School at the University of Reading is an expert on real estate indexes. He acts as an advisor to the Israel IVS Forum in setting up an Israeli commercial property index. We have asked him to write a short introductory paper to add to our series on International Views and Approaches, to be accessible without prior knowledge of the subject. We are grateful that he has kindly agreed.



## STEVEN DEVANEY

Steven Devaney is Associate Professor of Real Estate Appraisal at Henley Business School at the University of Reading in the UK. His research and instruction focus on commercial property valuation and investments. One of the areas in which he specialises are commercial property indexes. Other areas of interest are liquidity in private real estate markets and the performance of real estate developments. He has published several academic papers in leading journals. He has also written research papers for RICS, the Investment Property Forum and the European Public Real Estate Association.

# REAL ESTATE INDEXES

Indexes are frequently used to track the performance of economies and investment markets. Some of the best known indexes are those that track inflation, but they are also used to record trends in output and investment returns. Indexes are normally scaled to facilitate comparison over time and with other economic or financial variables. A specific time point is selected as a reference period and any changes in the variable of interest are used to compute subsequent values of that index. The variable might be a single item, but is more likely to be a basket of items such as a mix of goods and services in the case of inflation. When it is a basket of items, it introduces questions about how individual elements should be weighted to produce a composite series.

Indexes of real estate performance have become a common feature of real estate investment markets globally and are typically seen as a sign of market maturity and transparency. This is because market information of sufficient quality and quantity is required to underpin production of a successful index. A key element in the scoring for the Global Real Estate Transparency Index produced by JLL and LaSalle is the existence of indexes that measure market performance.<sup>1</sup> In that publication, the availability of indexes for the private market (direct investment and unlisted funds) and public market (listed real estate companies) is considered. This discussion focuses on indexes for the private real estate market.

The main aspects of performance likely to interest investors are the income return offered by private real estate, the capital return based on how the values of properties are changing, and the total return, which combines both the income received and change in value for assets over a specific period. Basic formulas for these three types of return are shown in Exhibit 1. These returns might well be measured by an individual investor for their own portfolio as a matter of routine, but pooling data to measure them at an aggregate level enables investors to compare their performance with the market overall, and to compare real estate as an asset class with other investments such as equities and bonds.<sup>2</sup>

The existence of market indexes can also facilitate quantitative analysis of the drivers of performance, which can assist investors with forecasting and portfolio decision-making. This is especially true where an index offers a reasonable time-series spanning different economic conditions and where there are subindexes that identify the most important parts of the market such as the main property types and areas. Other stakeholders in the real

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<sup>1</sup> The JLL and LaSalle Investment Management Global Real Estate Transparency Index 2020 can be accessed at [www.jll.co.uk/en/trends-and-insights/research/global-real-estate-transparency-index](http://www.jll.co.uk/en/trends-and-insights/research/global-real-estate-transparency-index).

<sup>2</sup> Note that there may be technical differences between a published market index and a benchmark produced by performance measurement services. For instance, a market index might feature additional exclusion criteria.

## Exhibit 1: main measures of real estate investment performance

The basic measures are as follows. More detailed versions of these formulas are used by the main providers of real estate performance indexes. See MSCI ([www.msci.com/real-estate-methodology](http://www.msci.com/real-estate-methodology)) or INREV ([www.inrev.org/market-information/indices](http://www.inrev.org/market-information/indices)).

**Income return = Net income(t<sub>1</sub>) / Capital value(t<sub>0</sub>)**

**Capital return = [Capital value(t<sub>1</sub>) - Capital value(t<sub>0</sub>)] / Capital value(t<sub>0</sub>)**

**Total return = [Net income(t<sub>1</sub>) / Capital value(t<sub>1</sub>) - Capital value(t<sub>0</sub>)] / Capital value(t<sub>0</sub>)**

Measurements of return for individual periods can be chain-linked to produce an index for a longer time frame. Starting from a reference period labelled to:

$\text{Index}(t_0) \times [1 + \text{return rate}(t_1)] \times [1 + \text{return rate}(t_2)] \times [1 + \text{return rate}(t_3)] = \text{Index}(t_3)$

estate market such as lenders and policy makers are likely to find this data valuable as well. In the area of macroeconomic policy, it can facilitate the monitoring of asset price bubbles and the associated risks to the financial system.

There are two broad approaches to producing real estate price or performance indexes. Transaction-based indexes can be estimated using information from real estate sales where this is disclosed, while appraisal-based indexes can be produced if investors have regular revaluations of their assets. Each of these approaches is now considered.

## TRANSACTION-BASED INDEXES

Transaction-based indexes are most commonly used to measure changes in real estate prices, but may also be used to estimate total returns where there is information about income received for the assets in question. Furthermore, the methods can be used to track movements in rental prices through time. A fundamental requirement is the disclosure of transaction information, whether this be through an official agency or via market information providers. Ideally, the information should include the amount paid, the date of the transaction, and the characteristics of the asset sold or rented, as well as other information necessary to interpret the context of the transaction (such as whether it was a forced sale or a transaction between related parties).

The simplest approach is to take an average of the prices observed during each measurement interval (e.g. in each year), with the possible addition of basic controls such as adjustment for the physical size of the properties concerned. If there is information on how the population of properties is distributed across types or areas, then a mix-adjusted

measure might also be possible. This controls for the fact that sales in a given period might not occur evenly in proportion to the relative importance of different parts of the market. Yet, even with these adjustments, a large volume of trading in each period would be needed for an average price series to avoid any significant distortion from variations in the mix and attributes of the properties being sold.

For this reason, several econometric methods have been advocated to create indexes that control for quality variations through time. The three main econometric methods are as follows:

- **Hedonic method:** prices are regressed on to variables that represent the main price-relevant features of buildings for that type of property. For offices, this might include size, age, location and specification. Sufficient depth of data on property characteristics is a key requirement of this method. It is more commonly used to estimate house price series than commercial real estate indexes. An example is the monthly Index of Prices of Dwellings published by Central Bureau of Statistics in Israel.<sup>3</sup>
- **Repeat sales method:** the change in price between two sales of the same asset as at different dates is modelled using regression techniques. A sample of properties that have traded more than once is required. This approach has less need for detailed data on characteristics, but the assets must not have changed significantly between sales. The Case-Shiller Home Price Indices in the US, published by S&P in conjunction with CoreLogic, are one example.<sup>4</sup> The method has also been used in commercial real estate by Real Capital Analytics and by CoStar.<sup>5</sup>
- **Assessed value method:** Prices for properties sold at different points in time are regressed on to valuations for those properties made at a specific time such as a tax assessment date. The movements in prices since that date can then be identified using time dummy variables in the model. An example of this technique being

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<sup>3</sup> For the Central Bureau of Statistics Index of Prices of Dwellings, see [www.cbs.gov.il/en/subjects/Pages/Index-of-Prices-of-Dwellings.aspx](http://www.cbs.gov.il/en/subjects/Pages/Index-of-Prices-of-Dwellings.aspx).

<sup>4</sup> S&P CoreLogic Case-Shiller Home Price Indices are at [www.spglobal.com/spdji/en/index-family/indicators/sp-corelogic-case-shiller/sp-corelogic-case-shiller-composite/#overview](http://www.spglobal.com/spdji/en/index-family/indicators/sp-corelogic-case-shiller/sp-corelogic-case-shiller-composite/#overview).

<sup>5</sup> The RCA Commercial Property Price Indices can be found at [www.rcanalytics.com/our-data/rca\\_cpqi/](http://www.rcanalytics.com/our-data/rca_cpqi/) and the CoStar Commercial Repeat-Sale Indices can be found at [www.costargroup.com/costar-news/ccrsi](http://www.costargroup.com/costar-news/ccrsi).

applied to commercial real estate across a number of countries is the set of MSCI Transaction-Linked Indicators.<sup>6</sup>

Outside of the housing market, examples of regularly published transaction-based indexes tend to be found in the most heavily traded markets. Large samples of sales in each period are needed to ensure reliable estimates, offer disaggregation by types and locations, and maintain continuity of publication. This can be challenging in weaker market conditions, since transaction activity often drops when prices are falling. Meanwhile, the method used will be influenced by the information available on each sale, and revisions to earlier results might occur depending on the method used and on the timeliness with which sales are reported. Given these issues, the main indexes used to track total returns of real estate investments globally are currently appraisal-based rather than transaction-based.

## APPRAISAL-BASED INDEXES

Appraisal-based indexes are possible where regular valuations of assets are carried out for a group of real estate owners. For example, investors might need regular valuations for purposes such as financial reporting and unit pricing. These valuations, along with data on income received and costs incurred, can be pooled to measure the returns achieved in each period by that group of owners. From this, an aggregate index of private real estate performance may be constructed. Such data are usually pooled by an organisation such as a trade association or specialist performance measurement firm. Examples are MSCI (Global), NCREIF (United States) and INREV (Europe). Some of these organisations also offer a benchmarking service to contributors.

An appraisal-based index is computed by summing the valuation, income and cost inputs, respectively, before calculating returns as per Exhibit 1. This means that the series will be value-weighted, with the most valuable funds or assets having the most influence on results. For a given measurement interval, returns are computed using a fixed sample of assets so that the indexes are not distorted by changes in the size of portfolios. Samples are then refreshed between intervals so that any new properties can contribute to the index in future periods. Two types of appraisal-based indexes are common:

- **Fund-level indexes:** these used reported net asset values and distributions from unlisted funds to compute the income return and total return from investing in private real estate. The inputs are at a portfolio level rather than for individual assets. Reported returns not only reflect the performance of the assets held by the funds, but

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<sup>6</sup> The MSCI Europe Quarterly Property Transaction-linked Indicator can be found at [www.msci.com/www/ipd-derivatives/msci-europe-quarterly-property/0164890192](http://www.msci.com/www/ipd-derivatives/msci-europe-quarterly-property/0164890192).

also their cash holdings, debt, and fund level fees and costs. MSCI, NCREIF and INREV all produce examples of such series.<sup>7</sup>

- **Asset-level indexes:** these use valuations conducted for individual buildings, as well as income received and expenditure incurred for those buildings, to compute either portfolio or market performance measures. Hence, asset-level refers to the inputs rather than the reported series. The calculations omit any fund level fees or costs and they ignore any debt raised against the assets. Returns are calculated on an ungeared basis (ignoring leverage) so that the performance of the underlying real estate is identified.

The appraisals that underlie these indexes are estimates of Market Value. These represent the amount that each property would have exchanged for had it been marketed and then sold by its owner at the valuation date. There will be uncertainty as to how accurately an appraisal captures the true market value, but errors in individual assessments should be diversified away at the index level provided that there are no consistent biases in how such values are produced. When measuring capital returns, the change between two appraised values is adjusted for any capital expenditure during that period. This expenditure is not then deducted from net income in the calculation of income return to avoid double-counting.<sup>8</sup>

Appraisal-based indexes have been subject to considerable scrutiny by academics and investors. This is because they are perceived to have given a smoothed and lagged representation of performance in the real estate market. Smoothing is where an index does not capture all the volatility in returns, while lagging refers to an index not keeping pace with market turning points. These perceptions have arisen through comparisons of appraisal-based indexes in countries such as the US to other market indicators and data for other asset classes. The nature of the valuation process and the reliance on historical sale comparables when forming opinions of value may contribute to this, as might behavioural factors and concerns to minimise transitory noise in valuations.<sup>9</sup> Such issues are not unique to real estate and also affect performance measurement of other privately traded assets.

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<sup>7</sup> For example, INREV publish a fund index for Europe, with subindexes based on the country and type of vehicle. They also collaborate with ANREV and NCREIF to produce a global real estate fund index based on data reported to each organisation. See [www.inrev.org/market-information/indices/global-real-estate-fund-index](http://www.inrev.org/market-information/indices/global-real-estate-fund-index).

<sup>8</sup> This treatment of capital expenditure means that measurement of capital returns is not consistent with how price changes are measured by a transaction-based index. So, some index providers also report changes in value without the capital expenditure adjustment. For example, MSCI publish “Asset Value Growth” and this is distinct from “Capital Growth”, which they also publish.

<sup>9</sup> For an introduction to these issues, see Crosby, N. & Devaney, S. 2019. “Appraisal-based indices” in MacGregor, B. D., Schulz, R. & Green, R. K. (Eds.), *Routledge Companion to Real Estate Investment*, Routledge, Abingdon, pp. 172-191.

## CONCLUSION

Real estate performance indexes have become an important feature of many real estate investment markets globally, increasing the transparency of those markets. Appraisal-based indexes, in particular, are being published for a growing number of countries and these facilitate analysis and comparison of returns both across countries and with other investment opportunities. The best known indexes with the longest time series can be found in North America, Europe and Australasia, but organisations such as MSCI have more recently launched private real estate indexes in other parts of the world, especially Asia. International investors can therefore make quantitative comparisons of returns for an increasing number of nations.

There are significant challenges in creating a reliable index of either real estate prices or performance. For a transaction-based index, there must be sufficient trading activity together with collation of the relevant details by either public or private agencies to support the estimation of price movements for different areas and types of property. Similarly, for an appraisal-based index, there must be a sufficient number of investors whose properties are appraised regularly and who are prepared to contribute the data needed. Neither a transaction-based index nor an appraisal-based index offers a perfect solution to monitoring private real estate markets. However, investors, advisors and other market participants in many countries have decided that the benefits make overcoming the challenges worthwhile.

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The Israel IVS Forum is an association of senior property professionals and stakeholders in Israel. Our aims are to advance adoption of International Valuation Standards (IVS) in Israel and to disseminate international best practice within the Israeli profession. We hold regular webinars and publish international best practice papers in both English and Hebrew. Please visit our website at [www.ivsforum.org](http://www.ivsforum.org)