



Real Estate Prices: an international handbook on Commercial Property Price Indices

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The need for reliable indices on property prices was recognized at a conference organised by the International Monetary Fund (IMF) and the Bank for International Settlements (BIS) in Washington DC, in October 2003. Subsequently both residential property prices and commercial property prices have been included in the IMF's list of Financial Soundness Indicators (FSIs). A new international Handbook on Residential Property Price Indices has been published under the auspices of the Inter-Secretariat Working Group on Price Statistics and with funding from the Statistical Office of the European Community (SOEC). An additional handbook has been commissioned on commercial property price indices (CPPIs). That latter reviews the different user needs, gives details of data sources and compilation techniques and evaluates the different methodologies. CPPIs are associated with a number of applications in connection with analysing economic trends for the purposes of formulating economic policy and managing the economy and for the monitoring of market performance in connection with individual investment decisions and with portfolio management in commercial property markets. More so than with residential property, there is often a lack of observable prices in consecutive periods to facilitate the computation of a price index that is not confounded by lack of data or changes in the different mixes of commercial properties and property characteristics entering the index at each computation. Commercial property is very heterogeneous. The lack of observable prices can lead to a reliance on valuations. In this paper I present an overview of the work relating to the CPPI handbook and how the challenges of computing commercial property price indices can be overcome and how different methods suit different user needs.

Keywords: concepts; heterogeneity; methodologies; international handbooks.

1. Introduction

Commercial Property Price Indices are required by two broad constituencies of users and are associated with a number of applications. Firstly, in the realm of official statistics they are required for analysing economic trends for understanding and tracking the economy and for formulating economic policy. Secondly, CPPIs are required by agencies and institutions charged with overseeing and regulating the health of the financial system and the investments industry. Related to this second usage, investors themselves can find CPPIs useful for the monitoring of market performance relevant to individual investment decisions and portfolio management.

Key uses include: macroeconomic accounting and reporting and macroeconomic management; financial stability analysis; and informing investment decisions. Monitoring the evolution and movement in commercial property prices is considered of fundamental importance particularly in times of economic turbulence but also to facilitate market stability in the longer-term.

Most uses of CPPIs desire in principle the same fundamental type of index: namely, an index that tracks well the actual market price changes of commercial properties.

It can be noted that, although the basic needs of all users are similar, different measures are needed for different uses and also different users have different user criteria: for instance stock versus transaction weighted indices and the relative importance of timeliness. It can also be



noted that for most official uses, appraisal-based indices are generally second-best to transaction-based indices: the former are aligned to the needs of investors in commercial property for making an assessment of current or future investments but do not always suit the needs of official statistics and where the requirements are for statistics that align to the principles underlying the System of National Accounts.

CPPIs have been given increasing prominence over recent years, as the need for such indices and their intrinsic value for economic analysis have become more fully appreciated.

An international Handbook on Commercial Property Price Indices is being written under the auspices of the Inter-Secretariat Working Group on Price Statistics and is funded by the Statistical Office of the European Community (SOEC). It follows the publication of a handbook on residential property price indices. The CPPI handbook reviews the different user needs, gives details of data sources and compilation techniques and evaluates the different methodologies.

2. Uses of Commercial Property Price Indices

The following applications are the main uses of Commercial Property Price Indices.

- *In the national accounts: using the CCPI in the estimation of a component of wealth and income and production, and as a deflator.*
 - *As component of wealth:* A stock weighted price index for commercial property is needed to estimate current “net” worth (defined as the value of all the assets owned by a commercial unit or sector less the value of all its outstanding liabilities). Such “sector” estimates also feed into the balance sheet for the economy as a whole – the latter shows the national wealth. Balance sheets allow economists to assess the financial status of a sector and allow for risk analyses and comprise part of the analytical input into financial soundness indicators. In addition, individuals may have an indirect stake in commercial property asset prices through pension funds etc.
 - *As a deflator:* Of particular relevance from a National Accounts perspective is the ‘capital account’. The purpose of the capital account is to record the values of non-financial assets (of which commercial property is a type) that are acquired, or disposed of, by engaging in transactions, and to show the change in net worth due to saving and capital transfers. The change in the net worth can be decomposed into its constituent elements by recording all changes in the *prices* and volumes of assets held, whether resulting from transactions or not.
- *As a financial stability or soundness indicator to measure risk exposure.* The close monitoring of the Commercial Property Market has been promoted by the inclusion of Commercial Property Price Indicators, and their residential property counterparts, in the IMF’s recommended list of Principle Global Indicators of financial stability (Recommendation 9 of the IMF’s Financial Stability Board Report to the G20 entitled “The Financial Crisis and Information Gaps”).
- *As a macro-economic indicator of economic activity.* Commercial Property Price Indices are just one of a number of economic indicators that enable analysts to keep a finger on the pulse of an economy, in particular when monitoring asset price movements.
- *For use in monetary policy and inflation targeting.* Rising prices of commercial property have been shown to be associated with periods of economic growth while falling commercial property prices often correspond with a slowing economy. It can be noted that historically, it



has been residential property price indices that have been most influential in the formulation of monetary policy. But CPPIs are, nevertheless of relevance.

- *As an input into a company's or a citizen's decision making on whether and when to invest in commercial property.* CPPIs are an input not only into the calculation of current and past investment returns but also in providing investors with knowledge on anticipated future returns based on historical relationships between commercial property prices and the performance of the economy and on working assumptions on the future economic outlook.
- *For use in making inter-area and international comparisons.* Regional and international indicators of commercial property prices and price trends are required: by Government and International Institutions for policy purposes, to analyse and take any necessary action regarding financial soundness, and by investors, such as managers of international property portfolios, in making decisions on their holdings of property to maximise return.

Indices tracking market values, and consistency with the System of National Accounts (SNA), are of paramount consideration. The construction of CPPIs also needs to be modular, i.e. made up of building blocks that can be inter-changed to deliver the different user requirements, as it is likely to be virtually impossible to have a single indicator that can fulfill all requirements.

3. Uses made of other indicators relating to the commercial property sector

The range of other indicators, relating to the commercial real estate market, reflects both the complex relationships between commercial property prices and the functioning of the economy and the key concerns of those monitoring the commercial property market. Indices of total investment returns, which include both the capital and income components of the investment return, can be useful. The IMF's Financial Soundness Indicators Compilation Guide, notes that "deposit takers may have large exposures (both direct and indirect) to real estate and that because of this they may be affected by the potential volatility of price movements. Moreover, real estate assets are a major element of the wealth of the private sector". The compilation guide also notes that "the direct exposure to risks arising from real-estate-related lending of deposit takers can be monitored through the FSIs related to real estate loans". The latter include: return on equity (net income to average capital [equity]); regulatory capital to risk-weighted assets; liquid assets to short-term liabilities; commercial real estate loans to total loans.

Land price indices are also of interest. Land is unique: it is neither produced nor consumed in that the stock of land is in general terms finite and does not disappear through continued use. It also represents a valuable asset, the price movements of which may be useful in analysing the wider economy or for helping to identify asset price bubbles or as a lead indicator of property prices. Land also enter balance sheets in the national accounts. The land component of a CPPI can be derived as a residual from an overall property price index minus a construction cost producer price index (with adjustment for structure depreciation as appropriate).

4. Data sources

The commercial property market is thin and heterogeneity is much stronger compared with the residential property market. Practical problems relating to data often arise. Index compilers are confronted with.

- Not being able to obtain enough data to construct the target index.



- Not having sufficiently detailed information to quality adjust for changes in the make-up of individual properties such as refurbishments and the updating of the infrastructure. e.g. the installation of new IT infrastructure, which is of more importance in a commercial building.

Against this background compilers of CPPIs exploit two data sources.

- *Documentation relating to the registration of transactions when the ownership of the commercial property changes.* In theory registrations should give the verifiable transaction or market price. The indices so derived are referred to as transaction-based indices.
- *Appraisals that give an assessment of value.* These appraisal values may be derivatives from an administrative system, e.g. valuations carried out by the revenue authorities for taxation purposes or by companies for their annual accounts, or may be carried out specifically for the purpose of constructing a CPPI. The indices are referred to as appraisal-based indices. They are compiled for a range of purposes and this influences the coverage and basis of the appraisal prices used. They are not purpose designed for constructing "official" CPPIs.

CPPIs based on the transaction prices of a constant-quality basket of representative properties have the advantage over appraisal-based indices of not only following the estimation principles of the SNA but also of being factual and impartial compared with the potentially subjective basis of valuations. The advantages and inherent superiority of transaction-based indices is well illustrated by the European experience that indicates valuation methods differ across countries and valuations differ across different valuers within countries, as well as being subject to dampening or smoothing of market price volatility and suffering from a tendency to lag behind transaction-based indices. Transaction-based indices are, of course, exempt of these problems.

But the current reality is that a number of practical difficulties can arise in fulfilling the measurement aim of a CPPI which follows the acquisitions approach - difficulties in addition to the lack of transactions and detailed information.

- *A lack of transparency.* This can originate either from complexities in the contracts of sale - transfers of commercial property can be very intricate – or from the evasion of duties imposed by the revenue authorities on sales of property. In addition, factors such as the existence of tenancy agreements, and planning consent for redevelopment etc. can impact on expected future returns and can affect the transaction price, but these factors may not always be recorded 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 and the sale of a commercial property may not be registered until some months after the transaction. The recorded price cannot be verified independently as to whether it was the actual price paid.

In summary, there is often a lack of observable prices in consecutive periods to facilitate the computation of an index that is not confounded by lack of data or changes in the different mixes of commercial properties and property characteristics entering the index at each computation.

Methodologies for dealing with such inadequacies exist e.g. reasonably useful and reliable quarterly transaction based (repeat-sales) indices have been computed with as little as 400-500 repeat-sales per decade (assuming transactions don't completely dry up during down markets).

Even if transaction-based databases are relatively scarce at present, it would seem plausible that they could be developed if countries wanted to take the initiative to instigate or help support



such database development. In principle, they could be cheaper to develop than appraisal-based databases, because it should be cheaper to extract a transaction price from a readily available database e.g. from an official register of transactions, than to hire an appraiser to do an appraisal of a property but in practice development costs can be high. Furthermore, appraisers ultimately have to rely on transaction price evidence to come up with estimates of “market value.”

For official statistics appraisals are generally used only in the absence of good quality information on transaction prices. For most purposes, the target or ideal index is one that is based on transaction prices. Sometimes compilers compile indices using a combination of transactions and appraisals. For example, IPD have developed a hybrid index methodology, which combines transaction information with valuation data to give a more complete measure of movements in commercial property prices. This experimental index links current transactions with previous valuations by way of hedonic-style regressions. The work is being undertaken in conjunction with the University of Reading. Further information is available from the website IPD.com. These “hybrid” indices, often referred to as “transaction based” or “transaction linked” indices, were first developed at MIT for NCREIF in the U.S.

For stock market based indicators of commercial property, market valuations are the appropriate measure to value portfolios. Thus, in a growing number of countries specialized firms or funds often referred to as “real estate investment trusts” (REITs) are listed on public stock exchanges. If a sufficient number of such firms owning a sufficient number and value of commercial properties are traded then it may be possible to develop what may be referred to as stock market based property return indices (SMPRIIs).

The data for other variables of analytical interest in monitoring the commercial property market, such as rents per m² and total investment return etc., come from a variety of different sources, usually from private sector organisations, with only some data being obtained or derived from official data or statistics produced by national statistical institutes.

5. Commercial Property Price Indices that are currently available

Transaction-based indices and appraisal-based indices are published by a number of public and private sector suppliers of CPPIs but the supply and use of such indices is generally not so well developed compared with residential property price indices – particularly for transaction-based indices which form the basis of indices needed for most official purposes. Neither has there been any significant move to the adoption of an internationally-recognised harmonised methodology. This was recognised in the IMF Data Gaps Initiative, which provided the impetus for the handbook currently being compiled. In reality, there are relatively few “official” CPPIs produced by national statistical agencies, and private sector providers are dominated by a small number of suppliers mainly producing appraisal-based indices. There has been limited exploitation of administrative data sources. In practice, the data required to construct the target index, once defined, are not always available on a regular and timely basis, if at all. Moreover, even where suitable data are available to construct a price index to meet the needs of one set of users, the data may not fit the requirements of another set of users

The existing CPPI indices give a hint of how much is possible in terms of overcoming the inherent challenges associated with developing and compiling indices for what is an important segment of the economy and of the financial system. The existing indices also illustrate the range and variety of different types of CPPI methodologies available to the compiler and the scope for innovation in the computation of CPPIs to produce fit-for-purpose indices.



Indices, such as Statistics Denmark's CPPI, and an ECB/IPD European index project, provide important indicative examples of the practical potential to compute CPPIs. The Statistics Denmark CPPI is a good example of the use of administrative appraisal (or assessments) data and the SPAR method and the ECB methodology is indicative of the potential to exploit and integrate currently available data sources to produce an amalgam of CPPIs that serve the main user need for comparable and relevant indices in the context of official statistics. The ECB work is very much work in progress.

One of the longest price index series relates to Hong Kong and is provided by the Rating and Valuation Department (RVD) of the Hong Kong Government. The RVD has published quarterly indices for four major property sectors in Hong Kong, namely residential, office, retail, and industrial properties, since 1979. Hong Kong is one of the most active real estate markets in the world. The Hong Kong real estate market is also one of the most transparent and, unlike many other countries, the properties are relatively homogeneous. This provides a very favourable environment for the construction of real estate price indices, which is not shared by many other countries. In particular, the number of repeated sales in Hong Kong has been very high: 23% of the transactions were repeat-sales in a 10- year cycle. All transaction data is publicly available since real estate transactions have to be registered and kept with the Land Registry of the Government of the Hong Kong Special Administrative Region (HKSAR). The Land Registry provides information such as transaction prices, transaction dates, building age and addresses. The transaction price is the price as stated in the deed of assignment.

The methodology of constructing the RVD Index is transaction-based, but the information for controlling quality constant is partially valuation-based. This method uses actual price data (price per saleable floor area) recorded in the Agreement for Sale and Purchase (ASP) of transacted properties in each sub-sector (by property types) as the basis for index construction. A regression-based mass appraisal technique (with rental returns and inputs from valuers) is used to adjust the transaction price for variations in quality over time.

6 Conclusions

There is a distinct lack of harmonisation in both the definitions and methodologies followed in the computation of the relatively few available CPPIs and in the valuations of commercial properties, which can underlie them. This limits the opportunity for making meaningful international comparisons of trends in commercial property prices and confounds comparative economic analysis. In addition, coverage and the coding of different types of commercial property varies between index compilers and there have been limited attempts to achieve statistical integration by using common coding between CPPIs and, say, construction statistics. International best practice and comparability are issues that are addressed by the CPPI handbook.

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