Statistics on real estate prices:
the need for a strategic approach

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The strategic issue

This note considers the strategic issues that arise in connection with the future evolution of statistics on real estate prices and argues for the development of a conceptual framework based on a systematic analysis of user requirements. Such a framework can then be applied in the context of individual national circumstances, including domestic demand for statistics and the availability of the latter as a by-product of the legal process for the sale and purchase of real estate, to identify suitable data sources and corresponding data gaps. The systematic analysis associated with such a framework can also be used for the formulation of standardised meta-data and in the longer-term to inform progress towards a coherent family of price indicators in a national context and greater international comparability in statistics on real estate prices.
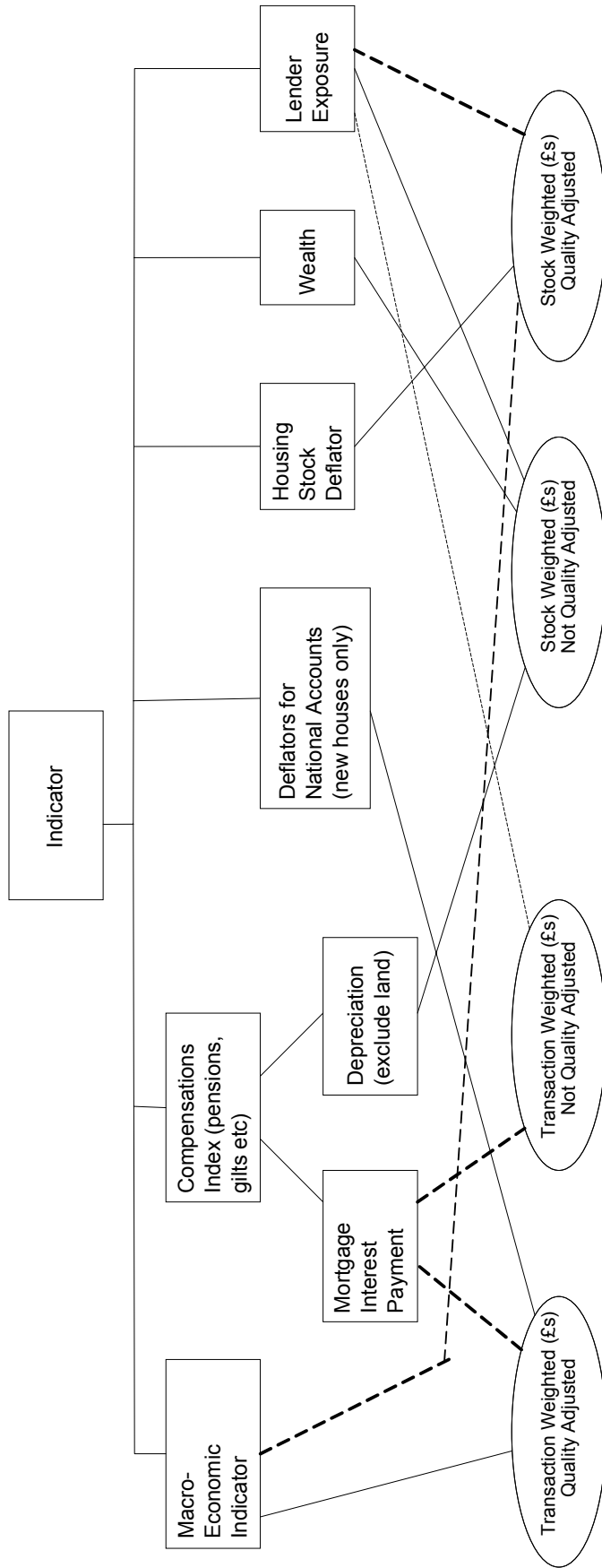
The note is written from the perspective of both a producer and a user of house price statistics. It focuses on house prices but can in principle be extended to real estate prices more generally. The thinking underlying this strategic approach emerged from the author's participation in the Conference on Real Estate Indicators and Financial Stability, which was jointly organised by the International Monetary Fund and the Bank for International Settlements and held in October 2003.

User requirements and conceptual frameworks

A systematic analysis of user requirements for statistics on house prices may take the form of a series of questions reflecting the different reason why users may want information on house prices. For instance, whether an index of house prices is to be used as one of a suite of general macroeconomic indicators, as an input into the measurement of consumer price inflation, as an element in the calculation of household wealth or as a direct input into an analysis of lenders' exposure. Such an analysis can then be transformed into a statistical user requirement and an associated conceptual framework by expressing the needs in statistical terms and identifying the common linkages and corresponding relationships at a micro and macro level. A first attempt at the preliminary stages of such an exercise for house price statistics is given in Diagram A. It is produced for illustrative purposes and may usefully be expanded to cover a number of additional dimensions. Its primary aim in the context of this paper is to initiate discussion rather than to present a definitive view based on current consensus. As such it can raise more questions than it answers.

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Diagram A

Derivation of the primary house price indices

(illustrative only)

Notes: 1. For depreciation and National Accounts deflators (to deflate the GFCF housing stock value) land should be excluded from a general macroeconomic indicator where the intention is to restrict the latter to private household consumption. 2. Land should also be excluded from the acquisition value. 3. A calculation of mortgage interest payments would require the use of a number of historical indices to estimate mortgage outlay at time of purchase and should include separate information on re-financing. 4. Only basic house price indices are covered in this table, not derivatives used in subsequent calculations. For example, the UK Retail Prices Index's treatment of owner-occupier housing costs, which is based on its historical roots in a compensation index, is essentially based on a mixture of the payments and user cost approaches although the RPI itself can be considered an acquisitions index. Under the *acquisition* approach the total value of all goods and services delivered during a given period, whether or not they were delivered, is taken into account. With *payments*, the total payments made for goods and services during a given period, whether or not they were delivered, is taken into account. Finally, *user cost (or consumption)* considers the total value of all goods and services consumed during a given period. The distinction between the three approaches is particularly important for purchases financed by some form of credit, notably houses, which are acquired at a certain point of time, used over a considerable number of years, and paid for, at least partly, some time after they were acquired, possibly in a series of instalments. The RPI mortgage interest payments calculation uses a mix/quality adjusted transaction-weighted index to provide an historical profile of past houses purchases. 5. Depreciation can be thought of as the costs of major repairs and renovations, with minor maintenance and decorating costs covered elsewhere in the index. In the United Kingdom it is priced using a smoothed house price index. 6. The treatment of mortgage payments in a compensation index depends on what the owner-occupier is being compensated for. For example, whether the historical calculation to estimate current levels of mortgage debt should include the change in profile of houses acquired over the years. 7. Clearly, in reality in some instances the primary calculation is unlikely to involve a single house price index. For instance, the calculation of wealth where separate price indices may be used to up-rate the prices of separate sectors of the housing stock (eg apartments in Central London, detached houses in rural areas of Scotland) for subsequent summation to produce a total value for the United Kingdom.

The analysis can also be simplified to provide a basic conceptual framework of fundamental principles. This is attempted in Diagram B.

Diagram B

Use matrix

	Transactions		Stock	
	Volume	**Value (£s)**	**Volume**	**Value (£s)**
Quality adjusted	Market monitoring, price of a typical house sold?	Macroeconomic indicator. Deflators for National Accounts. Mortgage interest payments (MIPs) for compensation index?	Market monitoring, price of a house typical of the stock?	Housing stock deflator. Macroeconomic indicator. Lender exposure?
Not quality adjusted		Total expenditure (weights data for MIPs in compensation index?) Lender exposure?		Wealth. Depreciation. Lender exposure.

It can be noted that the articulation in conceptual and statistical terms of user needs is not a trivial exercise. A key element for the successful delivery of statistics that are fit for purpose is to define precisely user requirements. This requires absolute clarity about what the statistic, in this case a house price index, is aiming to measure – a clarity that may not necessarily be forthcoming from users. Judgments will also need to be made.[2] The exercise is a challenging one in much the same way as with similar exercises for consumer price indices.[3]

A number of observations can be made even on the basis of such a limited exercise. For example:[4]

- Weighting schemes are an important conceptual issue that impact on the use to which an index is put. The construction of an index using expenditure weights based on housing stock and with no quality adjustment provides a measure of the increase in the average value of

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[2] For example, whilst the correct conceptual basis and statistical definition of a house price index for the purposes of deflating national accounts might be clear and uncontentious (because the framework for national accounts is agreed and relatively well-defined) it might be considered less clear in the construction of a house price index to be used as a general macroeconomic indicator of trends in economic activity, for example for modelling purpose, where measurement is less prescriptive. In the latter context, a transactions-weighted acquisition index might be appropriate for tracking inflationary trends in the economy but there are differing views about whether such an index should be restricted to new houses only and whether the index should include the price of land – issues which, in part, are also reflected in the alternative formulations used in constructing consumer price indices. Also there is a strong argument, in the context of financial stability indicators, for the separate identification of re-finances of mortgages as past experience indicates that the latter can surge to significant levels when interest rates drop.

[3] As with consumer price indices and the debate about cost of living indices (COLIs) and non-COLIs, the choices are not necessarily either/or. Different formulations should not necessarily be viewed as competing with one another. For instance, an alternative specification of a house price index for macroeconomic purposes might be one measuring the change in the value of the total housing stock. Such an indicator might be considered useful because owners get a "feel happy" factor from increasing house values and an opportunity to free up equity. Both could fuel inflation. Such an index would be stock-weighted, cover all houses and include the price of land. National statistical offices may decide to construct it as an additional rather than sole measure. Similar debates arise in connection with other uses of a house price index such as in the treatment of owner occupier housing costs in a compensation index.

[4] The issues become less trivial and more complex the greater the depth of analysis undertaken for the user requirement and associated conceptual framework.

the housing stock and is therefore a relevant measure for estimating wealth and lender exposure. In contrast, a quality-adjusted index restricted to "new" houses and expenditure weighted according to transactions may be more appropriate for inclusion in a consumer price index (CPI) that is being constructed as a general economic indicator.

- Quality adjustment[5] is also an important conceptual issue. It is relevant for inclusion in a transaction-based "Laspyres-type" CPI constructed as a macroeconomic indicator (as stated above) but has no place in the calculation of wealth, which like a house stock deflator should be weighted by stock but unlike the latter should not be quality adjusted.

Data sources and gap analysis

The next stage is to compare this framework with the currently available statistics and data sources to identify:

- major gaps in data provision;

- options for filling these gaps cost effectively from readily available sources;

- data coherence issues;

- the scope for further data integration and the need for new data sources.

This approach is analogous in part to the stage of production and stage of processing approaches that have been used as analytical frameworks for determining the development of consumer and producer price indices.[6]

At their most simple the frameworks described above can be mapped against a house price timeline.[7]

Such an analysis provides basic metadata. It also indicates the compromises made in using one all-purpose house price index and the corresponding data gaps. For example, that the main official house price index published in the United Kingdom by the Office of the Deputy Prime Minister (ODPM) uses transaction expenditure weights and is appropriate for inclusion in, for example, a CPI used for indexation of benefits but does not fully suit the needs of users who want to calculate "wealth" where stock rather than transaction (expenditure) weights are most appropriate. The latter may be addressed either by a re-weighting of the official index or by reference to one of the many indices published by lenders. However, the latter can suffer from limited coverage. Thus re-weighting of the official index provides a cost-effective solution to filling this particular data gap.

A more detailed gap analysis may point to solutions involving synthetic estimates, based on the integration of data from different sources. For example, it can be noted that the ODPM House Price Index referred to above has the advantages of being timely and not subject to revision but has the drawback that it excludes cash purchases. The systematic approach being championed in this paper might conclude that it may be possible to supplement the official index with information on cash purchases from the UK Land Registry. The latter is less up-to-date due to the time lag in registering transactions in the official registry but time series modelling may be able to address this misalignment. Some preliminary work was done on this in the United Kingdom but no firm conclusions reached, although it was clear that potential developments in this direction were for the longer-term.

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[5] Specifically adjustments for improvements such as central heating and double glazing. It does not cover changes in the mix of different house-types such as the relative numbers of four-bedroom detached-properties to one-bedroom apartments – any form of weighting implies mix adjustment to get a unit value.

[6] Wider Inflation Measures: the current state of the art and outstanding issues. Fenwick and Wall, Conference of the International Association for Official Statistics, 1998.

[7] A Comparison of UK Residential House Price Indices. Robert Wood, IMF/BIS Conference on Real Estate Indicators and Financial Stability, 2003.

Coherence and international comparability

The above strategic approach to the construction of house price indices not only provides a structured method for identifying data gaps but also a formal mechanism for obtaining greater coherence in national statistical systems and greater international harmonisation. Greater coherence of national statistical systems will be achieved within the context of a coherent family of house price indices, within real estate prices more generally and also within the broader family of price indices constructed as macroeconomic indicators and as part of the process of constructing other official statistics such as national accounts. Greater international harmonisation will be assisted from the availability of better metadata and from an emerging consensus of the statistical requirements of users and how these can best be addressed. Both aims will benefit from the identification and resolution of data gaps and differences, and an increased conceptual and technical understanding together with a better analytical capability.

Conclusion

The development of a conceptual framework for statistics on real estate prices based on a systematic analysis of user requirements and a corresponding gap analysis will generate standardised metadata and will greatly assist progress in the construction of a more complete and coherent family of statistics on real estate prices of increased relevance to users and based on agreed international standards.