

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.

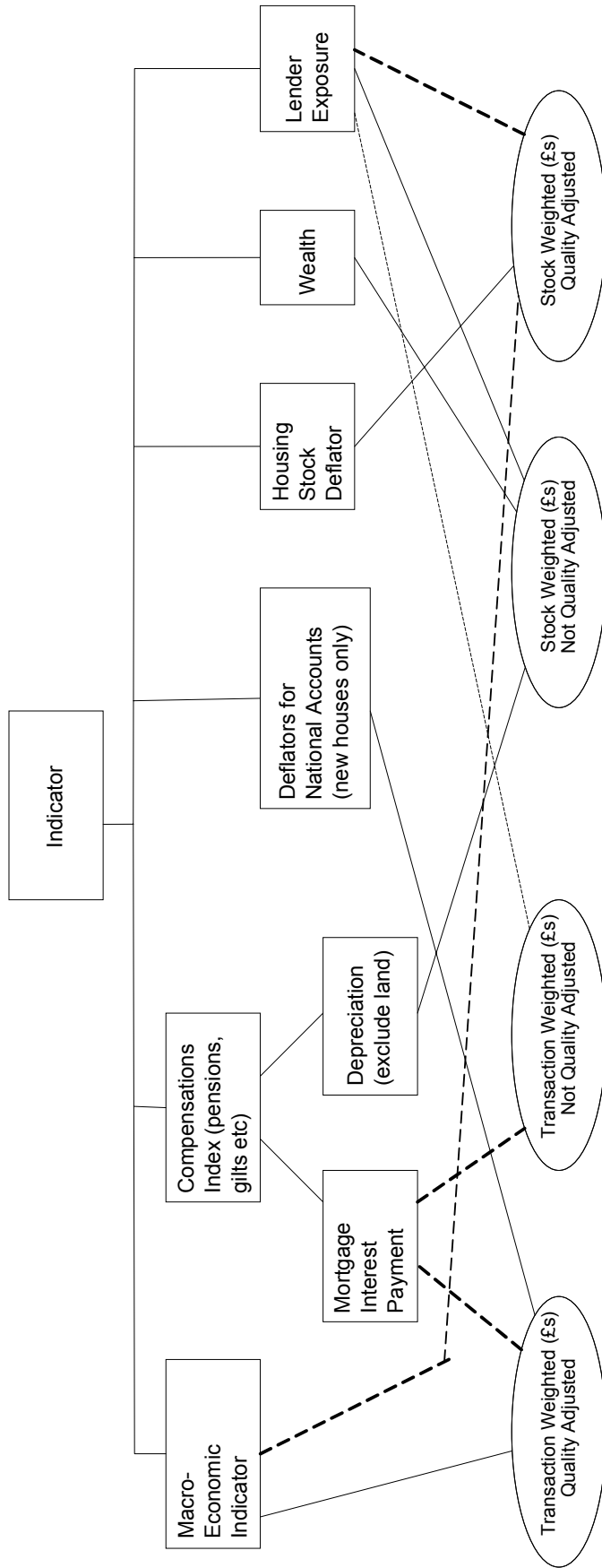
The note is written from the perspective of both a producer and a user of house price statistics. It focuses on house prices but can in principle be extended to real estate prices more generally. The thinking underlying this strategic approach emerged from the author's participation in the Conference 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 the acquisition value. 2. Land should also be excluded from a general macroeconomic indicator where the intention is to restrict the latter to private household consumption. 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 wholly paid for during the period, 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

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 uncontroversial (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 purposes, 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 adjustment⁵ 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.

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.

Summary of the discussion on areas of future work

Carol Carson

This session presents a way to bring together the various strands that we have heard throughout the meeting and to look toward the future. This seems to be a particularly useful focus because I'm sure many of us are starting from the point that while progress is being made in this area in some respects, we do hope that the future will lead to a wider spread of information about real estate indicators, and perhaps even some attempt to bring the various players among the users and producers of such data together to make progress at a more rapid rate into the future.

The way we have structured this session is to have panellists who will give their ideas, and then to have open discussion. We hope that in this way the panellists, who might even have some differences of opinion, would stimulate the discussion in this session.

Donald Haurin

In the introductory session, Carol and Paul posed the right set of questions for us. However, I do not think we have answered them well. But, asking the right questions is an important aspect of problem-solving.

I have been quite surprised by the involvement of private market vendors and other groups with the creation and distribution of price indexes. It is greater than I had anticipated. I knew of National Council of Real Estate Investment Fiduciaries (NCREIF) and Investment Property Databank (IPD). I did not know of the activities in South Africa or in some of the other countries. This observation suggests the possibility of private sector-public sector collaboration in the creation of these data in ways that is quite atypical, I think, for most data sources.

I'll turn to some issues raised at the conference, the first being "aggregation". There are clearly different price movements depending on whether one looks at a country as a single aggregate, or regionally within a country, or at different metropolitan areas, or at different property types. Given that these indexes move quite differently, the question arises as to whether we should aggregate them or leave them as a set of disaggregated indexes. Examples of using disaggregated indexes drawn from this conference include Susan Wachter mentioning differences in regional US home price indexes and Robert Wood mentioning differences between the price evolutions of low-priced and high-priced houses in the United Kingdom.

How do we judge this issue? Eventually, we want to talk about financial stability. Within this context, do we need a single price index that will merge together all of the disparate indexes at lower levels of aggregation into a single national index or do we need to keep all the indexes disaggregated? My initial reaction is that creating one aggregate index should not be the sole goal. For example, while the OFHEO national index of US house prices is useful, it is the one I use least in my research. Rather, I use indexes for regional or state levels, and often the metropolitan level indexes. I believe that this observation can be generalised, resulting in the claim that for research purposes, disaggregated house price indexes are more useful. A caveat is that the size of the country is important, but as long as there are identifiable regions and separate metropolitan areas, then the question of disaggregation arises.

If one is thinking about financial stability and the concern is about the effect of real estate price bubbles, at what level do bubbles arise? Most often, the US experience has been that bubbles are localised. The locality might be a metro area such as Boston, a state such as California, or even a region such as New England. But national bubbles, that is, the occurrence of real estate price increases that are not causally linked to changes in fundamentals or the expected future paths of fundamentals, have not been typical in the United States and may never have occurred at the national level. Thus, if you study only a single national house price index, there may be no evidence of a price bubble because localised bubbles are a relatively small component of the national market. Even so, a

localised house price bubble could have implications for financial instability, the major concern of this conference.

So it strikes me that creating house price indexes at the regional or other localised levels is the right way to go. It also would, in a sense, solve some of the aggregation issues. Thus, those countries currently developing real estate price indexes should not always jump to aggregating localities and property types. Rather, create a series indexes and study their joint movements or lack thereof. An interesting set of questions about the dissemination of price changes across different housing types and across regions can be addressed only if multiple house price indexes are available.

My second set of comments addresses the choice of best method to create a house price index, that is, what is the “best” index. This issue is relevant for and important to transitional economies because they are now choosing methods to create real estate price indexes. There were many examples presented at this conference where researchers reported on how they are collecting new datasets in order to develop price indexes for residential or commercial properties, or where they are selecting a particular methodology to create an index.

I think there is a choice among two options. One could look at the available data and then, based on that data, create the best feasible price index. Or, one could take a much different approach and first try to identify the “best” index. That is, first determine what type of index is needed to link price indexes to financial stability, then select the methodology to create that index, and finally figure out what data you need. As an academic, I much prefer the latter approach to the former. I would rather make a decision of what is needed for research purposes and then find and collect the appropriate data. Or, if need be, start a procedure to collect the data.

We are at a turning point in terms of recognising the importance of real estate prices on national financial stability and instability. Perhaps we could seize this opportunity and try to enforce the second mechanism; that is, try to decide what it is that we want for a standard index. For example, we could adopt a hedonic price methodology as being the appropriate method for creating real estate price indexes. Then we know we need a particular type of data and the goal becomes clear: collect the data needed for this method of creating the indexes. Perhaps it will take a decade to be able to organise a way to collect these data and collect sufficient amounts to create the price indexes, but then you end up with indexes that will be reasonably comparable across countries.

Some of the papers presented at this conference compare, numerically or graphically, indexes that were created with quite different methodologies. However, I really do not know whether or not the price movements that were displayed were due to differences in true movements in prices or where they were simply due to differences in the methods used to create the indexes. In contrast, the French experience seems to be the right way to approach and solve this problem of index creation. They developed a method to get the data they needed to create valid price indexes, even though this took substantial time and effort.

How can we achieve the needed degree of consensus and comparability? Perhaps the IMF and BIS have a role here, or perhaps other national or transnational entities. These agencies could, minimally, state the characteristics of a desirable index, endorse a methodology, and describe the type of data that you need to collect.

Which method among the alternative methods described at this conference should you choose? If you limit the discussion to the hedonic model, the question arises as to what is the best estimation method? We have heard about choices that have to be made regarding functional form and the set of explanatory variables; for example, do you include interaction terms or not or allow for nonlinearities? Other choices, closer to the frontier of research, involve including spatial interactions and spatial autocorrelation. These are methods that have been found to be very useful in terms of increasing predictive ability, and that seems to be one of our goals. As an economist, when I am formulating and testing behavioural models, I am not looking for the model that has the highest explanatory power. Rather, I am looking for sensible models of behaviour whose form is guided by theory. Whether spatial hedonic models are the best for this goal is unclear, but for prediction accuracy, they often are superior. Right at the research frontier are a set of hedonic models that allow for spatio-temporal autocorrelated errors. These are the so-called STAR models, and there are a number of researchers, perhaps a few dozen or so in the United States, that are working on these models. However, the data requirements for these models are much stricter than for the standard hedonic model. Agreeing on a general approach such as the hedonic model would provide a framework, and then advances in methodology within this framework could be disseminated over time.

A third set of my comments is about transmission mechanisms. The issue is how you link movements of prices in the various real estate sectors with issues of financial stability and instability. Other than one paper at this conference, this linkage has not been made. Our concerns were mostly with the measurement question which is, of course, a primary question. There also were some papers about stability, but we were pretty silent with regard to describing the exact mechanisms linking housing or commercial properties and their price changes with financial stability and instability. So I think we need to be thinking about transmission mechanisms. My example of a mechanism, based on household wealth, follows.

Assume that you are observing a residential real estate market and a price increase occurs. Thus, homeowners' wealth rises. What happens? Presumably, consumption and savings behaviour change. There are a couple of papers that measure these responses, but only a couple, and the ones that I know are only about the US experience. Thus, even though wealth has been studied a lot, relatively little is known about how house price changes affect wealth and what happens to the consumption of durables and nondurables at the household level. Clearly more research is needed on this microeconomic question.

Next, how do you aggregate these micro responses to an economy-wide macro response? There's a great deal of modelling that needs to be done to forge this link. And, even though I am interested in and study real estate and real estate prices, I have not thought about the consequences of price changes for macro-level financial stability issues. Further, what also is apparent from this conference is that those who are thinking about financial stability have not been aware that real estate could be an important component. We need to bridge this gap, and a lot of serious modelling needs to be done.

A series of questions follows, these being examples of possible research topics. First, are households' responses to house price appreciation that is part of a bubble the same as that for households who have experienced continuous but low rates of appreciation, for example, the Midwestern United States? In the Midwest, you can count on this modest appreciation and my guess is that consumption behaviour adjusts. But, if you were living in California and experienced a 25 percent increase in house prices for three years in a row, will you behave differently than a Midwesterner because you guess that this appreciation is part of a bubble that will likely burst? I would guess that those experiencing a bubble respond to their wealth gains differently. But we have no models of these behaviours or any empirical evidence.

Second, what are the behavioural reactions to reductions in house prices? Once again, we know very little. We know something about default behaviour, if the price reductions are large enough. Also, there are a few recent papers that look at an issue called nominal loss aversion; that is, if house prices are falling, do people not sell their homes? A related question is that if house prices fall, how is mobility affected? A very small literature investigates this question with, thus far, ambiguous results. A full model of the link between mobility, consumption, and savings behaviour at the individual level has not been formulated. However, this issue is important. If there were significant reductions in house prices that shut down labour mobility, very significant macro consequences could ensue in the United States.

A third example combines the above two. What happens if there is a house price bust soon after a boom? Is the effect on household behaviour the same as when there is only a bust? I suspect not, but testing really has not been done.

A fourth example elaborates on the consequences of what appears to be a trend in the United States. Previously, loan-to-value (LTV) ratios fell as households aged; that is, people paid down their loans. Over time, this behaviour appears to be changing. With the advent of home equity loans and relatively cheap refinancing, LTVs are staying high even as people age. What is its likely effect? We know little for sure, but if house prices change and LTVs are high then households may be much more sensitive to these price changes. And if they are more sensitive, then the macro consequences might be much more substantial than they were in the past. That is, perhaps the relatively low LTVs of elderly people were a buffer in the system. That buffer is declining and may be gone in the future. Again, a whole set of analysis is needed to study the macrofinancial stability consequences of this trend.

My last point is about the accuracy of house price indexes. In order to link price index changes with macroeconomic change, understanding the timing of real estate price cycles is very important. We need to accurately measure price changes in periods as short as 18 months in order to be able to draw causal inferences. Thus, to model transmission mechanisms, we certainly need accurate house price data. Accuracy of the price indexes is highly important for being able to do these modelling exercises because the impact of the house price change could be transmitted to the macro economy within one- or two-year periods, or even shorter. And if our house price and commercial real estate

price data are not as accurate within that time period, then we have a significant problem in estimating models and inferring causality.

Ivan Matalik

I would like to make some remarks on the importance of real estate prices, mainly from the point of a central bank in a transition country. All central banks feel the growing importance of financial stability issues. This is a big challenge for central banks, whether they are formally responsible for financial stability or not. There is an ongoing discussion as to whether central banks should be responsible for supervising financial markets and whether banking supervision should be a function of central banks. Even if some central banks are losing their banking supervision responsibilities in the future (there is a discussion about this in the Czech Republic at present), information regarding real estate prices is still needed because they are an important indicator of monetary developments. In other words, we need all or most of the financial soundness indicators to meet both monetary and financial stability targets. I welcome the IMF initiative to introduce guidelines for the compilation of financial soundness indicators, including those for real estate prices.

Thinking about future areas of work, I see a very important question of implementation of these guidelines. First, there is the issue of how to obtain data, and second, how to interpret the data. Obtaining data is a major challenge. Interpreting data means studying empirical evidence. In transition countries the record is too short so the link between real estate prices and financial stability is difficult to establish.

I heard many interesting reports from developed countries at the conference and I learned how they solved different questions and problems, such as improved timeliness of data and more effective ways of collecting data. But in the case of transition countries, we basically start from scratch. We face basic questions like, for example, which kind of the price index is the best, which institutions will be responsible for data collection, how often to collect the data and which reporting structure to apply. Transition economies are really at a different stage than developed countries. From this point of view, the role of international institutions, such as the IMF and the BIS, is very important. It would be very good to see other international institutions more involved in this area, for instance Eurostat and the ECB. A special seminar in the framework of technical assistance for our countries could, for instance, be very useful.

I heard at the conference that it is very difficult to find one standard unified methodological approach. However, there seems to be agreement on the key issues that need to be addressed, particularly on the choice of index and the frequency required for the construction of the index. Knowing what we do not know but need to know makes it easier to find the right way to move forward.

David Fenwick

There is a general agreement emerging about what needs to be done and this is very good because it reinforces the important messages that are emerging. I have a dual perspective of a statistician who is both a provider and a user of data. For instance, I chaired a committee to develop house price indices in the United Kingdom and I use real estate data in the UK Retail Prices Index.

Two things have struck me about this conference. Firstly, the universal agreement that statistics on real estate prices are very important. Perhaps this is not surprising, given the nature of the conference and the specific interests of the delegates. But I think it adds to the growing realisation that this is an area of statistics that for some time now has been given less attention than is warranted by its importance. For example, if you consider house price indices, these are useful in their own right as an economic indicator but can also feed into the analysis of household income, wealth, distribution of wealth, output, government finance, and inflation through consumer price indices (CPIs). The range of uses for statistics on real estate prices is vast.

The second thing that has struck me is that the availability of data is not uniform across countries and, in general, statistical offices have been very slow in reacting to user need. In part this is because the demand for statistics has not been well-articulated by users. And, following on from that, there has not

been a fully inclusive discussion of the conceptual issues and how user needs translate into a statistical design.

Producer and user communities have generally been in a reactive mode, and this has meant that statistics on real estate prices have rarely reached the top of the priority list of statistics for development. Of course, this is made more difficult by the inherent measurement issues associated with real estate indices that have been discussed in some detail during the course of the conference.

We have a situation where there is a lack of comparability between administrative sources, both in terms of definition, coverage and time lags, and where conducting customised surveys is very expensive. So, at least for the foreseeable future, we need to look at the further exploitation of administrative systems to produce data which are fit for purpose and comparable between countries.

Having set the background, I would now like to make a few specific observations which I hope will help to take the debate forward. The first one is that the need for house price statistics is multi-dimensional. I have already listed the numerous direct and indirect uses of house price statistics and more generally statistics on real estate prices. This is self-evident, but is not always recognised in the statistical community. And it is certainly not reflected in data availability. We need to ask ourselves if one price index can suit all purposes. This cannot be answered without comparing systematically data availability against user needs. Discussions at this conference point to a family of indices; for instance, to reflect the need for indices weighted by transaction and by stocks.

Now, sometimes the choice between transactions and stocks makes a numerical difference and on other occasions it does not. But each represents a different concept. The choice of index depends on use and what you are trying to measure. This re-enforces the need to understand and to articulate in statistical terms what we are aiming to measure, based on the purpose of the statistics, before we go through the process of measurement.

This leads to a second observation relating to differences in data availability. Too much data can be nearly as problematic as no data at all, particularly if there is a lack of coherence and resolution. We need to look no further than the recent quote about statistical fog by the Governor of the Bank of England when he was reviewing the trend in house prices in the UK, when it was unclear whether UK house price inflation had come to a turning point or not. The problem was that there were a number of alternative official and unofficial statistical sources with different conceptual bases measuring different things, with different methodologies and datasets confounding interpretation. And that was made worse by the differing time lags in the data. At a particular point in time, the analyst had access to a variety of indices referring to different points in time with different methodologies, which at least superficially showed different stories. This causes possible confusion not only from a domestic viewpoint, but also from an international perspective where the associated problems become more acute. The underlying cause is a lack of clarity about user needs and the best statistical construct and also a lack of international consensus and guidelines on statistical measurement.

My third observation relates to the requirement for detailed data to give users the analytical capability to interpret data. This includes the geographical dimension, old versus new property, and houses bought as the primary dwelling versus those bought as second homes. Without that analytical capability, the challenge of actually using data becomes quite overwhelming.

A number of questions were asked at the beginning of this conference, and in particular whether we can identify a specific set of real estate indicators for macroeconomic policy and financial stability. The discussions over the last two days have drawn us in that direction. A set of real estate indicators needs to be constructed within a well-articulated framework of an integrated and coherent family of indices. The lack of a framework has the potential to cause all sorts of problems and should be considered a serious omission that needs to be addressed.

The starting point for such a framework should be a review of the relevant conceptual basis for each index and how those indices then relate to one another. The framework can then be used to identify data gaps. This is my first recommendation.

That leads to a second recommendation relating to the harmonisation of methods and application of best practice. A clear message has come across over the last two days that there are differences in index construction that not only relate to the conceptual basis of these various indices, but also have a bearing on their technical rigour. In addition, differences in index construction can lead to significant differences in measured real estate inflation and interpretation.

Harmonisation also involves more detailed technical issues such as mix adjustment. There has been quite a lot of discussion on mix adjustment, whether a matrix approach or hedonics should be used. It is essential to arrive at a position where there is a consensus of opinion about preferred methods and an understanding of the pros and cons of alternative approaches.

We can take by way of example the discussion this morning on the relative merits of geometric and arithmetic means. Such an issue is not a trivial one. In certain circumstances, it can have a major impact on the measurement and perceived level of real estate inflation. And indeed there are various arithmetical and conceptual issues relating to the use of each. Issues like this warrant further investigations to increase understanding and to facilitate recommendations on best practice. This can only be achieved by more research, innovation, and sharing of experience. This conference provides a good basis for taking such work forward.

Another issue to emerge is the need to look for more creative solutions to some of the data and index number constructions problems that need to be confronted. I'll just give an example here. I have already mentioned that, in the United Kingdom, we have a number of different house price indices, reflecting different conceptual bases and measuring prices at different points in the time line. Compilers of statistics need to consider how to better exploit the best characteristics of each dataset to combine them to produce a single definitive index, using, for example, modelling techniques. In the United Kingdom the most up-to-date official indices exclude the 25 percent of purchases where dwellings are bought by cash. It is legitimate to ask whether it is possible to link the different sources of data and use the mortgage purchases to give an early estimate of the price trend in cash and total purchases.

Now, it might be terribly difficult, and indeed this is indicated by some initial research done in the United Kingdom, but there is a strong case for a systematic investigation into whether more robust and relevant statistics that better meets user needs, can be derived from available data sources. So my third recommendation is for the facilitation of more research, innovation, and sharing of experience.

How do we go about this? We have achieved a great deal over the last two days in terms of identifying the issues and we now need to consolidate this and take the work forward.

The first is to properly articulate user needs, and the second is to translate this into best statistical practice within an appropriate conceptual framework. Given the importance of real estate price statistics, serious consideration should also be given to producing an official manual or set of best practice guidelines. The latter will not only provide a useful reference document but will also empower statistical offices to further develop their statistics. This is my fourth and final recommendation.

Naseer Ahmad

It was a few months ago that the Governor of the State Bank of Pakistan desired that we should construct a housing price index so that the private sector - especially the financial sector - could make use of the index. We had no idea how to construct a housing price index. We searched the web. There is a lot of material and we decided to take constant-quality price indices based on hedonic regression as the methodology and started working.

Data collection posed many difficulties. You have administrative records from centuries ago, but when you look at the data available from them; you will find that they are mostly useless; you cannot take a single standard unit out of it. Acquiring data is difficult: people are often not available and sometimes they are not willing to give you any information. At some point early in the project we complained that the State Bank of Pakistan was not the best placed to construct a housing price index and that some other agency should take over the initiative. But it was the wish of our Governor that we remain in charge so we continued.

This project was handed to me on 1 July 2003 and within a few months we had collected data from Karachi, the largest city of Pakistan. We decided to start by constructing a housing price index only for Karachi City. Sampling turned out to be a major challenge and we decided that we needed technical advice regarding the sample selection procedure, as we are not familiar with all the issues. We referred this to our Federal Bureau of Statistics, which has a division for sample selection.

The fact that we needed to construct an index that would meet international standards was a challenge and an opportunity. The data should not only be useful for domestic users but should also

be of sufficient quality to use in various international forums. That meant that our data should meet minimum requirements in line with international best practice. That has turned out to be a useful benchmark for our work.

At the conference I have received plenty of information and met various renowned experts. I hope to receive some useful feedback on the project we are undertaking in Pakistan so that our final deliverable will be useful to domestic and international users and that it meets best practices.

Like other methodological manuals like those for Balance of Payments Statistics, Monetary and Financial Statistics Manual, Data Dissemination Standards and Data Quality Assessment Frameworks, the compilation guide for Financial Soundness Indicators will prove to be very useful. Perhaps it will be possible at some point to also develop a more detailed compilation guide for real estate indices.

Estrella Domingo

For a country like the Philippines, which intends to start the construction of a real estate price index, the meeting proved to be very informative and useful. Regarding the user requirements, I have to admit that when the issue of the need for a real estate price index was first brought to our attention, we had a limited view of what the index would be used for. Having heard the various presentations at the conference, I am now more convinced of the importance of the project despite the problems that we foresee regarding the compilation of the index, in particular as a result of the limitations of the existing real estate valuation system in the Philippines.

Regarding the data issues, I was enlightened on the type and extent of data that are needed for the construction of an appropriate index. At this point I feel that we actually have the basic data to start the compilation of the index, except for some data quality issues. Regarding the methodology, I learned quite a bit from the experience of countries, for instance with respect to the use of hedonics.

As we will not need to start from zero, we can start by applying the methodologies explained to us at the conference. I am therefore confident that the Philippines will be able to come up with its first real estate price index by next year.

I have two recommendations. The first is that for the purpose of international comparability, countries need a standard guideline which can be adopted by the countries in pursuing their work on the real estate price index. The second is for the IMF to put up a networking group through which national experts can exchange information on their activities regarding real estate price indices. There would be clear benefits if countries that have very good experiences could share these with the countries that are just starting.

Open discussion

Mr Landefeld: Accurate measurement of the real housing values is extremely important to the analysis of consumer spending, business cycles, and productivity. In recent years, for example, the data were important in providing an overall picture of household wealth and the economy. They showed that the precipitous fall in equity prices was at least partly offset by large increases in residential property values, which helped explain the surprising strength in consumer spending (and continued low saving) that offset large declines in investment spending; all of which resulted in the US avoiding a major downturn in 2000-01. Tracking these changes in household wealth required up-to-date and accurate data on changes in relative prices.

Another example relates to productivity growth in construction, where despite rapid innovation - increased energy efficiency, pre-fab construction, and a dramatic increase in amenities - we have flat to declining productivity in this sector. This conundrum has raised concerns among data users that while we may know the relative trends in asset prices, we have not adequately adjusted for quality improvements - in both residential and non-residential construction. Hence, we are overstating inflation and understating real output and productivity growth in the United States.

In the session on methodological issues regarding residential real estate prices, we are heard from Susan Wachter and Bradford Case about their research suggesting that there is not enough quality adjustment in residential housing prices. This is a topic of much discussion in recent years, and there is research on both sides of this difficult issue, partly reflecting the lack of adequate data to fully assess the impact of changes on prices. The other serious problem in measuring the value of residential real estate is the old saw - location, location, location - and how we can capture neighbourhood effects, such as the quality of schools, crime, pollution, and other amenities, in our quality adjustments. How are we going to measure those things? I frankly do not know, but it will clearly require the development and compilation of source data and innovative research.

In the session on methodological issues on commercial real estate price indices, one of the major problems was how to interpret series constructed from various types of source data. One of the benefits of complete sets of accounts is that it confronts the problems that are identified when data based on different source data and methods are used. Not too many years ago, we - the staff of the Bureau of Economic Analysis (BEA) and the Federal Reserve Board (FRB) - noted that if you took the value of corporate non-residential (commercial) fixed assets from BEA's national wealth accounts and subtracted it from what the FRB was carrying for the overall value on its national balance sheets, we ended up with a negative value. This sparked research and changes at both agencies - including a new quality-adjusted price index for non-residential housing at BEA - but as of yet, the conundrums relating to both the BEA-FRB balance sheets and the low to declining productivity in construction remain with no clear solution in sight.

What struck me was the multiplicity of indicators discussed during the conference. I'm not sure all of us were aware of just how many indicators there are and how many new indicators are probably needed. Moreover, for conceptual and empirical reasons the choice of the indicator can be very important to the results that we get. The difficulty - given the multiplicity of things we have to consider - in constructing appropriate indices is formidable to say the least. This is true especially when one considers cross-country comparisons and the differences in factors influencing housing demand and supply tastes, rates of technological change and innovation, and the resulting differences in the characteristics of housing stocks. The transfer of research findings and experience across countries, for example, might be practical in the case of commercial property, where there is more commonality across countries, but not for residential properties, where differences across countries are larger.

Mr Case: It seems to me that there are three key messages that come out of this conference, particularly regarding development of price indexes in emerging market countries.

Firstly, the costly piece of the process is data collection, so the question is how to leverage data collection efforts. In the United States, the most widely used price index is the OFHEO repeat sales price index. Why does that even exist? Because the data are already there. That was not a data collection effort for the purpose of putting together that price index. So the choice of methodology is driven by where you can get the data at a reasonably good quality cheaply.

Another example is the NCREIF index for commercial properties based on quarterly appraisals. Now, you can do a little bit better by recognising that not all of those are real appraisals and restricting it to just real appraisals. You could do a little bit better if you restrict it to transactions. But that is a question of degree. The fundamental thing is that the data are available from quarterly appraisals, and those are there because of accounting rules, not because we set out to do a price index. So the first lesson is to leverage data collection efforts.

Secondly, collecting data from scratch, I think there is no substitution for going for data on market transactions data.

Thirdly, legal institutions are very important in getting the data that are critical to developing a good price index. This was brought out in the discussion on the situation in the Czech Republic. The problem there is that the transaction prices that are reported are not necessarily the real transaction prices. Transparency is very important. By developing the legal situation that will give you the good data, you also promote transparency more broadly, that is a great side benefit.

Mr Verbrugge: I wanted to make one comment on hedonics. It seemed to have received mostly positive reviews here and I wanted everyone to be aware of recent work by Ariel Pakes at Harvard University. There is some criticism of traditional hedonic methods and some alternatives which are easy to implement. So I would encourage anyone who is seriously considering moving to hedonics or who uses it intensively to take a look at that research.

Mr Renaud: I worked in Thailand after the crisis and I jokingly told officials that for the price of one single house they could have saved themselves a fortune by monitoring the real estate market. I would like to bring to your attention the importance of the institutional environment, in particular the legal framework. I would like to cite Malaysia as an example, in particular how they have dealt with the question of proprietary data. In Malaysia, they have a valuation law and they created a valuation institute. I do not know how many people are aware of the annual real estate reports that Malaysia puts together. The question is, whether the legal framework they have developed is working well, could be improved or is necessary. We have focused on the macroeconomic needs and statistical needs, but the legal environment that might facilitate the collection of data may also deserve some attention.

Finally, Rupert Nabarro told a very interesting story. I would like him to write a paper about how he got started, because a lot of the owners of commercial data do not want to share them for commercial reasons.

Mr Fisher: I have been thinking about Don Haurin's point that maybe we do not want to aggregate. It seems to me that when there is really a problem affecting financial soundness, it is that everybody, every area is moving in the same direction. And I guess I am always amazed at how correlated indices across different countries seem to be, at least in terms of major turning points. It makes me think of Brad Case's comments that what we really care about are asset correlations, or maybe to say that differently, the correlations across different regions and across different countries. I do not know whether we know a lot about the extent to which different areas are correlated in different countries. Or whether, if one country is in trouble, other countries are going to follow shortly. Maybe we need to give some more thought to that.

Mr Ahnert: I think it would be worthwhile to try to search for partners, for collaborating institutions when setting out to construct real estate price indices. I somehow have the expectation that no statistical office will be ready to immediately jump into producing such indices because it is now a financial stability indicator. Up to now, some statistical offices have not produced these statistics. The requirements which have been spelt out at the conference are unlikely to change this situation.

I have a concrete comment in this respect. For European countries, Eurostat is working on a pilot project for residential property prices in the context of developing harmonised consumer price indices. If the project is adopted, this will result in these indices for about 30 countries in the Europe. As far as I can judge it, however, there is a certain likelihood that the project will fail simply because the resource requirements to carry it through are judged to be too high. Therefore, it would be important that the requirements of the IMF and the BIS as well as the arguments made at the conference on the importance of real estate indicators for financial stability analysis are presented to the statistical authorities in Europe, ie Eurostat.

A second point that I wanted to make is closely linked to this. If it is believed that residential property prices are very important, and everybody said that at the conference, then why not include them in the list of core financial soundness indicators instead of encouraged indicators?

My final point is that, apart from prices of real estate, it would be important to also have a very basic set of accompanying structural indicators. The draft compilation guide for FSIs mentions some of these and I think they are very useful. Moreover, information on the stock of dwellings is important. Though this should normally be provided in the national accounts' balance sheet data, this is in most cases, even in the current 15 EU countries, completely lacking.

Mr Van den Bergh: I was struck from the presentations in the last two days of the number of stakeholders or constituents involved in real estate statistics. Just to list some of them, not in order of importance: the tax authority; notaries; registrars; banks, obviously; specialised mortgage lending institutions or other intermediaries that are specialised in this; supervisors; the buyers and sellers, individual consumers, households and corporations; those are the ones that purchase the valuation information; the valuers themselves, the assessors. There are also various social departments and urban developers, I suppose, and other interested parties in the economy or in the political area; investors, domestic and international; real estate agents; national statistical institutes. And then the analysts and economists are very interested in these data both from a monetary and from a financial stability perspective. I have probably missed one or two categories. That is an impressive list of potential interested parties. Some are compilers, others users of data. It should be possible to get the stakeholders around the table at one point or another and to leverage their expertise.

Mr Helbling: From the perspective of financial stability, two important points have come out. First and foremost, turnover data are extremely important, and I think we should not exclusively focus on prices. The other point relates to the work done at the IMF on banking crises across a large number of countries. There is pretty strong evidence that when you have problems in the real estate sector that have stability implications, they are far more likely to emanate from the commercial sector than from the residential sector. There has been quite a lot of focus on the residential sector at this conference, but we have to bear in mind that it is extremely important to pick up information on the commercial sector as well.

Ms Laferrere: The use of “hedonics” has sounded as a source of difficulties, whereas it is not. It is just the use of an econometric technique. Some prices we do not observe, so we need a model to estimate these. That is just what hedonics is about and it is really something quite simple. But perhaps dropping the word hedonics and using econometrics instead would make it easier to understand what it involves. Also, the models that are estimated using hedonics are revised only every five years. We do not change the adjustment we make with hedonics or econometrics every quarter. So the message for an emerging market country is that it is a useful method to consider. It is not that difficult.