How complete and how comparable are data on non-financial corporates, household sector balance sheets, and housing markets across countries?

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The current crisis provides the context for new thinking about how to measure vulnerabilities in the non-financial sectors that might feed back onto the financial system. Unlike previous banking crises in industrialised countries, this one was triggered by a household sector and its home mortgage obligations. Normally, imbalances build up in the business sector, for example in commercial property markets or leveraged buyouts. The household sector reacts much later: mortgage arrears rates typically only start to rise (and housing prices fall) significantly once a recession is underway and unemployment is rising rapidly. That is the reverse of the pattern seen in the current US housing crash. The rise in US mortgage arrears has also been unusually severe relative to labour market developments and to past US experience. These contrasts raise the questions of why the United States was different this time, and whether any data existed that would have signalled this unusual vulnerability.

The IMF's own compilation guide for financial soundness indicators (FSIs) already includes a number of measures covering the non-financial sectors (IMF 2006). For the corporate sector, these include leverage, return on assets, interest cover, exchange rate exposure and the number of distressed firms seeking bankruptcy protection. For households, leverage is not included; instead, the focus is on ratios of debt and debt servicing to income.

There are three rationales for constructing such indicators. Different indicators generally serve one rationale more than the others. Some indicators can show the extent of a movement in particular macro and financial ratios. Others are designed to show whether that movement is a signal of a build-up in imbalances or vulnerabilities. And when things actually go wrong, some indicators can show how extensive the damage might be for the financial sector or the macroeconomy more generally.

To fulfil these purposes, indicators should be consistent with some basic principles. They should be:

- **Relevant**: that is, they should provide an informative reading on vulnerabilities and build-ups of imbalances;
- **Based on evidence**: grounded in both theory and empirical evidence; and
- **Risk-oriented**: focussed on tail risks and tails of distributions that could result in losses or other damage to the financial system;

The rationale for the third principle is that the average or median entity in a sector is usually not the one that causes problems for the financial sector. Rather, it is the tail of higher-risk households and businesses that instigate or perpetuate a feedback loop with the financial system.

The assessment of *movements in macro-financial variables and ratios* has already been fairly standardised, given the existence of the SNA. Financial accounts are available for most

industrialised countries, at least, either via national agencies or the OECD. Some differences in sectoral definition and level of detail remain; for example, the treatment of unincorporated enterprises varies. Nonetheless these data sets are comparable enough to be going on with.

Outside the SNA/financial accounts space, the necessary data are less available. Housing prices are a case in point. It is not a new observation that the purpose determines the best price measure to use (see, e.g. Fenwick 2005). Most data sets relate to transacted prices, but some questions relate to the average price of the whole housing stock, or the distribution of prices, for which detailed data are not available in many countries. For example, calculation of the leverage on the housing stock requires an estimate of the stock's value. The percentage of home owners (not just recent home buyers) with high loan-to-valuation ratios also depends on the value of properties that might not have sold recently.

Cross-country comparability is much also looser for data outside national and financial accounts domains. For example, quality-adjusted housing price series are better indicators of pure price movements than a median transacted price. As such they are probably better suited to assessing changes in deviations from fundamentals. But no two countries' quality adjustments are alike, which makes cross-country comparisons difficult. Repeat-sales, hedonic or stratification methods are all used, and no country seems to employ all three methods. If, on the other hand, leverage or asset portfolio concentrations are the issue, a median or average price – in currency units not index points – would be better.

Most countries' housing price data are not representative of the whole market, and the coverage gaps differ across countries. Some series focus on the major cities rather than the whole market; others relate to a particular housing type such as detached houses. Still others only cover certain classes of purchaser. For example, the US FHFA series only covers transactions financed by a prime conforming mortgage from one of the GSEs. One reason for these inconsistencies is that data sources differ. In some countries, price series are derived from land titles records; in others, lenders or real estate agents provide the raw data.

Cross-country comparisons are even more strained when trying to assess *if and how far an imbalance has built up*. Comparing aggregate ratios can lead us astray, because they do not capture developments in the tails of distributions. Broader distributional effects can also muddy cross-country comparisons. Consider the difference in the vulnerability of two household sectors with the same aggregate debt-income ratio, but with all the debt in one country being held by wealthy households with high, stable incomes, while in the other, it is all held by households with few assets and low, unstable incomes.

For this reason, the indicators we use need to be grounded in good theory and empirical evidence. There is no theoretical or empirical reason to expect ratios of housing prices to income to revert to long-run averages (or peer averages), for example, because income is not the only fundamental determinant of housing prices, even in the long run. Cross-country gap analysis of simple macro-price ratios is therefore likely to be quite misleading, and appears to have been so recently. Because housing prices had (on some measures) not risen as far in the United States in the recent boom as in some other countries, some observers concluded that the US housing market had less of a bubble, if any, than those other countries. Subsequent events would suggest otherwise: only in the United States did a sharp fall in prices and a large rise in arrears rates occur *before* the economy went into recession and *before* credit conditions tightened for other reasons. Unfortunately, data on fundamental drivers of housing prices are even less available on a comparable basis than the prices data themselves.

One area where better data might have alerted observers to the fact that imbalances were building up in US mortgage markets more than elsewhere would have been around **lending standards**. It is now generally accepted that lending standards eased more in the United States in recent years than in other countries. But quantifying the difference is very difficult. There is no agreed way to measure lending standards; even the indicators that already exist, such as loan-to-valuation ratios, are only patchily available across countries; and there are country-specific factors, such as the existence of negative amortisation mortgages in the United States, which would not be picked up in standardised measures.

Once the risks have crystallised, *assessment of the damage* becomes an issue. Even here, though, simple aggregate measures can mask the full story. Publicly available measures of borrower distress such as arrears rates are not consistently measured across countries. Some count the number of loans in distress, others are by value, and the duration of arrears and representativeness of the sample can differ. Even if measured consistently, arrears rates or the share of non-performing loans (NPLs) can have different implications for loan losses depending on other factors. For example, the share of non-performing housing loans on bank books that are also impaired (not well covered by collateral) has averaged roughly 20 per cent of NPLs over the past few years in Australia. This compares with more than 65 per cent in the United States, even in the boom period. So the US arrears rate is not just higher, it has worse implications for financial stability at any given level.

For all these reasons, FSIs (or other rules of thumb) are still not very comparable across countries. Even if they were, they are not a substitute for human analysis. The distributional effects are very important in assessing vulnerabilities and imbalances, so macro-level indicators can be seriously misleading; indeed, they were arguably quite misleading about relative imbalances across countries in the recent period. To get a better read on the sustainability of a particular level of a macro ratio, or of cross-country differences in these, policymakers need to supplement macro indicators with more detailed analysis. This should incorporate country-specific institutional factors and fundamentals. Softer signals of imbalances in the market can also be useful, even if they cannot readily be used in statistical analyses of departures from fundamentals. Examples of these might be increases in demand by speculative investors (such as 'flippers' in housing markets), attempts at fraud, or the encouragement of either in the popular media.

References

Fenwick, D (2005), 'Statistics on real estate prices: the need for a strategic approach' in *Real estate indicators and financial stability*, BIS Papers 21, April.

IMF (2006), *Financial Soundness Indicators Compilation Guide*, available at http://www.imf.org/external/pubs/ft/fsi/guide/2006/.