Comments by Sofie Waltl and Robert Hill on the paper:

“Quantile Regression and the Decomposition of House Price Distribution”

by Yongheng Deng, Xiangyu Guo, Daniel McMillen and Chihiro Shimizu

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This paper decomposes changes in house prices into changes in coefficients (i.e., shadow prices), and changes in physical and locational characteristics.

Decomposing mean changes based on linear regression models is known as the Oacaxa (1973)-Blinder (1973) decomposition.

Machada and Mato (2005) extend this kind of analysis to quantile regression models thus allowing changes in the entire price distribution to be decomposed into changes in coefficients and characteristics.

McMillen (2008) was first to apply such a decomposition to house prices.

This paper combines the Machado-Mato decomposition with the rolling time dummy (RTD) method of Shimizu et al (2010), and then applies it to Japanese housing data.

The authors find that estimated coefficients associated with the characteristics floor space and age differ strongly between boom and bust periods, and that this supports the need for time-varying coefficients.

Also, price changes are mainly driven by changes in coefficients.

Is the intercept (or quarter dummy) also considered as a "coefficient" in this sense?

If so, this result is not surprising as time dummies are expected to capture *everything else* apart from effects associated with observed house characteristics.

In particular the time dummies pick up macroeconomic changes over time.

It might be interesting therefore to also try and decompose the coefficients effect into a time dummy and shadow price effect.

The characteristics effect is decomposed into structural and locational components.

The authors find that the structural portion of the variables effect is more important than the locational portion.

Would this finding still hold if locational effects were modelled differently (see later slide)?

The quantile decomposition exercise for Tokyo yields interesting results.

The housing bubble around 1990 was probably bigger than official price indexes indicated, due to declines in the quality of the characteristics towards the end of the bubble.

The opposite is observed in the price increases before the GFC, and the subsequent drops.

These effects are less pronounced for the 10% quantile than for the 90% quantile.

A nice feature of the paper is that it compares six major Japanese cities. While general trends are similar across cities, the authors find substantial variation for other quantile levels and differences in the timing of the bubble.

Hopefully more decomposition results for other cities apart from Tokyo will be included in the next draft.

The methodology produces quality-adjusted price distributions.

This allows *quality-adjusted* price *levels* (means, medians, variances but also all other quantiles) to be compared across cities and with other measures such as income to construct affordability measures.

This is an important advantage of the methodology which is not shared by standard house price index techniques.

Suggestion regarding the modelling of locational effects

The OLS hedonic regression models only explain about 65% of house price variation.

The treatment of locational effects could be improved.

Location is modelled by city dummies, the walking time to the nearest station and the commuting time to the city center.

Given that exact longitudes and latitudes are available for each address a more sophisticated approach is possible.

It is not clear though whether such an approach would make much difference.