Property price distributions of Taiwan and the UK

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Many complex systems exhibit heavy-tailed distributions in observables that characterise the systems in question. Amongst these are naturally occurring phenomena such as wildfires, ranking of words used in literature, earthquakes or landslides.

In this work we add to the above knowledge by reporting on the residential property price distributions of Taiwan and the UK.

The behaviour of residential house prices in the UK and elsewhere has attracted growing interest in recent years. This is, perhaps, not surprising as prices appear to have only recently come out of one of their prolonged downturns in the UK.

The residential property markets of Taiwan and the UK, which are markedly different to each other, are analyzed, and compared and contrasted. Whereas for the Taiwanese market, the main interest lies in the footprint (area) of the property, for the UK market, the focus tends to be on the number of bedrooms. Of course, the area covered by the property is also an important factor in the UK but the headline figure tends to be the number of bedrooms (as well as the location).

We study the tail of the cumulative distribution function and find that it follows an approximate power law. The exponent for the data from Taiwan is compared and contrasted with that from the UK. We find that the house price per unit area in Taiwan and property prices in the UK display a log-normal distribution. We discuss the implications of our results.

For the UK housing market, we also study the variations in property prices since 1953 by evaluating three different measures of inequalities for similar properties in different regions of the country: the Gini index, the squared coefficient of variation and the mean logarithmic deviation. The three different measures are tracked over time, highlighting key features in property prices. Of the three measures studied, we find that it's the Gini Index which is the most useful for our purpose. Indeed, we find that the Gini index increases when the underlying market prices are also increasing and, hence, indicates that there is greater variation (inequality) in property prices in a rising market. This conclusion is consistent with a recently proposed Housing Wealth Inequality Index.

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