Why youth hostel showers are like the stock market

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Diversity keeps you warm. At least that is true while you're having a shower in youth hostels. If you like, this sums up the research project just published by scientists from the Universities of Fribourg and Bonn. Their result is not as trivial as it sounds. Ultimately it shows that heterogeneity provides stability, whether this is in a shower, in power grids or even on the stock market.

Having a shower in a youth hostel can be risky when there is not enough hot water for everybody. If only one visitor turns up the hot tap during the early morning shower, everyone else is threatened by an icy gush of water. This unwanted form of hydrotherapy is particularly likely to happen when all the shower taps have the same possible settings, in other words if cold and hot water can be adjusted to exactly the same amount in all showers. But if the water taps in each shower have their individual quirks, the risk of extreme fluctuations is less.

At least that is what the Bonn economist Christina Matzke and her colleague Damien Challet, a physicist at the University of Fribourg, say. They modelled the temperature profile of showers in a youth hostel on the computer. 'All in all, heterogeneous taps offer advantages – they prevent the average shower temperature of all guests from suddenly dropping or rising,' Christina Matzke explains. 'From the perspective of the individual they also have disadvantages, as it’s more difficult for each person to set the right temperature.'

The problem sounds comical, but in principle it can be applied to all situations where people compete for a scarce resource, whether this is hot water, electricity or equities. One thing is always true, the more individualistic the behaviour of those involved in the market is, the more stable the whole system becomes. Put simply, the only reason why our electricity grid does not break down is that not all the inhabitants of Germany switch on the tumble drier at the same time. And if all shareholders made strictly rational decisions on their investments, there would probably be a lot more turbulence on the stock market.

The result is also significant from a theoretical point of view. 'We show what different results economic models can produce, depending on whether they are based on homogeneous or heterogeneous behaviour,' Christina Matzke emphasises. Accordingly, it is important to account for differences in individual behaviour when making forecasts. Although it sounds obvious, economists long ignored this insight. For decades their models were dominated by 'homo economicus', an imaginary standardised market investor who always made rational decisions rather than deciding according to individual criteria.

Source: University of Bonn

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