

# News & views

## Human behaviour

# Propelling the poor to demand taxes on the rich

Colin Tredoux & John Dixon

A field experiment reveals that people are more likely to demand that rich members of society should pay more taxes when reminded about ongoing inequality through exposure to a symbol of wealth. **See p.257**

Financial inequality has many effects on the poorest members of society, including lower quality of life and reduced life expectancy<sup>1</sup>. For instance, the poorest people in England can expect to live for 8.5 years less than the richest<sup>2</sup>. Under what conditions will those living in poverty seek redress? On page 257, Sands and de Kadt<sup>3</sup> ask this question of residents of a township in South Africa – one of the most unequal countries in the world<sup>4</sup> (Fig. 1). They find that people from neighbourhoods of low average socio-economic status are more likely to support a demand that the rich pay more tax if they are reminded of inequality.

Surveys and laboratory-based studies of human behaviour have extensively examined how information about inequality affects people's attitudes to a range of factors, from generosity to belief in government. But less well studied is how people respond to reminders of inequality in real life. In particular, such field studies have been lacking in countries outside the wealthy Western world.

Enter Sands and de Kadt. The authors selected seven sites in the township of Soweto that have wealth levels 50% lower than the national average, but that also have high levels of local wealth inequality. They placed a luxury car on a busy street and asked passers-by to sign one of two petitions, randomly assigned – either one that demanded increased taxation on wealthy people in South Africa, or one that petitioned to replace nuclear power with alternative energy sources. In control conditions, the car was absent.

The researchers report two notable findings. First, pedestrians are 9% less likely to stop and sign either petition in the presence of the car. Second, when this 'suppressive effect' is controlled through statistical methods, those who stop are 11% more likely to sign the tax

petition than the anti-nuclear petition if the car is present. Sands and de Kadt conclude that the luxury car acts as a reminder of inequality that leads people to demand redress.

The authors provide corroborating data from a 2015 Quality of Life Survey<sup>5</sup> conducted in the broader Gauteng province, which includes Soweto. One survey question asked whether the rich should be taxed more. The researchers showed that people living in regions of local inequality (where they were likely to encounter signs of wealth within one kilometre of their home) were more likely to support an increase in taxes than were those living elsewhere. The effect did not apply over

larger scales – when inequality was present over areas of 5 or 10 km<sup>2</sup>, for instance.

Sands and de Kadt's study shows that everyday reminders of inequality spur people on to acts of resistance. Their focus on microenvironments of inequality is valuable, and resonates with proposals put forward by us and others<sup>6</sup> about the role of the micro-environment in racial segregation.

As with all research, there are caveats to consider. For example, because of the study's set-up, people who stopped to sign the petition were not asked whether they had noticed the car. This type of question might have been avoided for fear of biasing results, but a side effect is that we cannot know for sure that the car reminded people of inequality.

There are also three key aspects of Sands and de Kadt's work that warrant further consideration, to help put the results into context. First is the form of resistance against inequality measured. The authors asked people to sign a petition, which is a form of normative resistance – an action accepted and regulated by the authorities. However, non-normative expression in the form of community protests, which sometimes can be violent, is commonplace in South Africa. One study estimates that more than 1,000 protests take place there each year<sup>7</sup>. Those living in poverty in South Africa are therefore clearly aware of inequality, and so it is unclear whether reminders that prompt normative resistance mark a major change in



**Figure 1 | Inequality in South Africa.** Sands and de Kadt<sup>3</sup> showed that presenting people with a visual reminder of inequality makes them more likely to demand redistribution of wealth.

attitudes and behaviour. That being said, it is difficult to ethically examine non-normative resistance in field studies. One of Sands and de Kadt's achievements is that they found a way to test ethically acceptable ways of priming normative resistance.

Second is Sands and de Kadt's focus on micro-level inequality in Soweto. This is undoubtedly the level at which most people living in poverty experience inequality day to day. However, Soweto is almost exclusively populated by Black South Africans, and income inequality is even greater between the historically white and Black areas that make up the broader industrial heartland of South Africa. Going forward, it would be interesting to put the authors' results into the wider context of racial stratification and injustice in South Africa. Researchers should ask whether awareness of inequality at the macro-scale is also a factor in resistance against inequality.

Third is the meaning imparted to people by the luxury car. The social comparisons and inequality perceptions cued by micro-level symbols of wealth are not known. However, they must be considered if we are to understand the social psychological processes at work. Does a luxury car prompt interindividual comparisons (it is unfair that X gets to drive that car), intra-community comparisons (that car is probably owned by a wealthy Sowetan), generic 'rich versus poor' comparisons (the gulf between the haves and have-nots in South Africa is unfair), or even broader interracial comparisons (for instance, comparisons that remind Black people of economic disparities between Black and white communities)? Disentangling these possibilities could be achieved in future by interviewing research participants directly, or through carefully crafted post-experimental surveys.

Sand and de Kadt's study takes an innovative approach to answering an important question. Wealth disparities are ubiquitous in unequal societies, and it is hard to determine experimentally exactly what will result in acts of resistance from the poor. The current study shows that, when nudged, those living in poverty are inclined towards normative protest. But whether this can contribute meaningfully to lasting change is uncertain, and hampered, as the authors point out, by persistent segregation between wealthy and poorer communities. Such segregation probably serves to keep reminders of inequality as just that – reminders.

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Condensed-matter physics

# Inductors enter the world of quantum mechanics

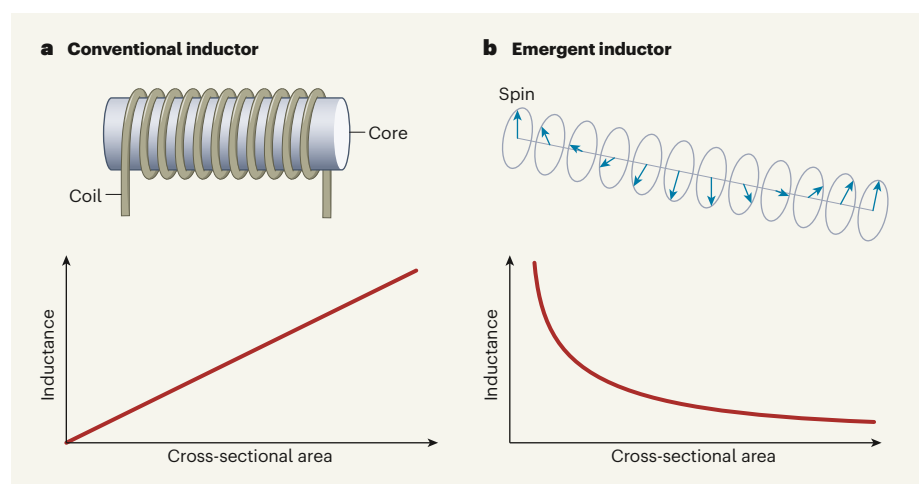
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Electronic devices called inductors are hard to miniaturize because their effectiveness is proportional to their size. An approach based on quantum mechanics could overcome this issue, offering many potential applications. **See p.232**

One of the fundamental components of electrical circuits is the inductor, which provides inductance (opposition to changes in electric current). Conventional inductors consist of a coil of wire wrapped around a central core. Unfortunately, because the inductance of such devices is proportional to their cross-sectional area, it is difficult to miniaturize them while keeping a reasonably high inductance. On page 232, Yokouchi *et al.*<sup>1</sup> report a quantum-mechanical inductor, called an emergent inductor, that uses the electric field produced by the current-driven dynamics observed for intricate structures of magnetic moments (spins) in a magnet. Notably, this

device has an inductance that is inversely proportional to its area and does not require a coil or a core – characteristics that are highly desirable for practical applications.

Emergent electromagnetism refers to electromagnetism in which the generated electric and magnetic fluxes are described by a concept in quantum mechanics called a Berry phase<sup>2</sup>. Physical systems that exhibit emergent electromagnetism include magnetic systems that have non-collinear spin structures, whereby the direction of magnetization varies with the position of the spins. When electrons flow along such structures, they can become strongly coupled to the local arrangement of



**Figure 1 | Conventional and emergent inductors.** Electronic devices known as inductors resist changes in electric current – a property called inductance. **a**, A conventional inductor comprises a coil of wire wrapped around a central core, and has an inductance that is proportional to its cross-sectional area. **b**, Yokouchi *et al.*<sup>1</sup> have produced an inductor, termed an emergent inductor, that uses intricate structures of magnetic moments (spins) in a magnet. A particular arrangement of spins, known as a helical spin structure, is shown here. The authors' device has an inductance that is inversely proportional to its cross-sectional area, paving the way for miniaturized inductors that do not require a coil or a core.