Monthly Payment Plans Increase Willingness-to-Pay for Energy Efficient Vehicles [1, 2]

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INTRODUCTION

The climate crisis requires a rapid shift to more energy-efficient vehicles to reduce carbon emissions. A barrier to this change for many people is the upfront financial cost. When consumers buy cars and domestic appliances, some options are more expensive but would recover more than the price difference through lower running costs over time. However, people purchase these options less often than such economic calculations would predict. This gap between predicted and actual take-up of energy efficient technologies is called the 'energy paradox'. Understanding and countering the energy paradox matters for climate policy.

The leading explanation for the energy paradox is 'time discounting', which is the idea that people simply care less about what they might have to pay in the future compared to what they pay now. However, other explanations are possible. This study used a controlled experiment to test alternatives to time discounting as explanations for the energy paradox. One alternative is the idea that when people intuitively sum up a sequence of numbers – such as expected fuel savings that accrue over time – they *systematically* underestimate the total.

DATA AND METHODS

A nationally representative sample of 2,368 car buyers took part in an online experiment. They were presented with a scenario and asked to make a decision about leasing a plug-in hybrid vehicle for three years. The lease required a deposit and 36 monthly payments. They chose between just two options, which were identical except one car had better fuel efficiency. We displayed the fuel cost for

[1] This Bulletin summaries the findings from: McGowan, F. P., Denny, E., & Lunn, P. D. (2023). Looking beyond time preference: Testing potential causes of low willingness to pay for fuel economy improvements. *Resource and Energy Economics*, 75, 101404. Available at: https://doi.org/10.1016/j.reseneeco.2023.101404

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each car for a typical amount of driving. Participants were asked: “How much extra would you be willing to pay for the more fuel-efficient car?” They typed a figure to indicate their willingness-to-pay (WTP).

The logic of the experiment was to randomise participants into different groups and to vary both how the payments were scheduled over the 36 months and how the fuel cost savings were framed. For the payments, participants were asked how much more they would be willing to pay in one of three ways: upfront, yearly or monthly. Similarly, the fuel costs were displayed in one of three ways: totalled over the three years, annual cost or monthly cost. In this way, we could see whether the amount extra that people would pay for the more fuel-efficient car was more affected by when they had to pay (time discounting) or by how much weight they gave in their decisions to sums of smaller amounts (the alternative explanation).

Results

Consumers who were asked to make an additional monthly payment had higher WTP than those asked to do so annually or upfront. By contrast, displaying the fuel cost saving over a longer period of time (three-year savings or annual savings) resulted in higher WTP than framing fuel savings as per month, although the impact on what people would pay was smaller than the effect of varying the payment schedule. Most importantly, this pattern of results could not be explained simply by people discounting future payments and savings compared to immediate ones. The variation in how much people were willing to pay for a car was consistent with people giving too little weight to sums of smaller amounts.

Conclusions

Our findings suggest that the energy paradox is not caused by people simply discounting payments and savings in the future, but is partly down to consumers placing insufficient weight on sums of smaller amounts when they make purchases. The results hence give guidance on possible ways to overcome the paradox and to promote decisions that are better for reducing greenhouse gas emissions while providing consumers with long-term savings. Prices that are paid in multiple small instalments or fuel economy descriptions that aggregate the savings into annual or longer-term savings are likely to lead to more investment in energy-efficient products. Government grant schemes (and communication of such schemes) for electric vehicles and household retrofitting could benefit from these insights. The consumer biases demonstrated in our study also imply scope for regulatory intervention to promote product descriptions that help consumers to make better long-term decisions.