

## A small box that can change the course of history

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### Abstract

The Brexit process remains incomplete, and the UK government has already incurred costs as high as £2 billion for these “regretted” Brexit votes (Owen & Lloyd, 2018). In our experiment, printing one small additional option box could easily sway or even reverse the MV outcome. Therefore, if the demonstration held in the UK on October 19 this year for planning a second “Brexit” referendum proves effective, we recommend that UK policymakers carefully review our research findings and heed suggestions from other behavioral scientists concerning “option addition” (e.g., Brams, 2016) before designing the second referendum ballot. Particularly, when opposing public opinions are evenly divided (e.g., 2016 Brexit or China’s current waste management issue), governments should carefully consider whether to include a “virtually cost-free” small box—the “Not Yet Decided” option—when holding referendums.

### Full Text

#### A Small Box That Can Change the Course of History

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In the 2016 Brexit referendum, voters faced a binary choice between retaining the status quo (remaining in the EU) and changing the status quo (leaving the EU) (see Figure 1 [Figure 1: see original paper]). The result was that 51.9% of voters checked the box for Brexit, while 48.1% checked the box for Remain.

Immediately after the results were announced, 1.2 million voters regretted their decision to vote for Brexit. Had they chosen Remain, the election outcome might have been different (Dearden, 2016). The media even coined a new term, “Bregret” —a portmanteau of “Britain” and “regret” —to describe this public sentiment (Tyran & Wagner, 2016; Lalić-Krstin & Silaški, 2018).

Why did 1.2 million voters fail to express their true preferences during the referendum? After all, no one could force them to check a box for an option they did not want. Intriguingly, research in behavioral decision-making has shown that many seemingly trivial aspects of choice architecture can forcibly reverse majority voting (MV) outcomes, such as positive-negative framing of outcomes (Tversky & Kahneman, 1981), acceptance-rejection response modes (Shafir, 1993), and default-option settings (Johnson & Goldstein, 2003).

To explore the choice architectures that might influence such voters' decisions, we designed two voting formats (without vs. with a third option/box labeled "Undecided") for three salient issues: the Brexit question concerning British citizens, the waste disposal issue concerning Chinese citizens, and the AI challenge question concerning citizens of both nations. By comparing the same decision-makers' choices under these two conditions, we assessed the extent to which the "choice box" could affect final referendum outcomes or account for the emergence of these Bregret voters.

For our hypothetical second Brexit referendum, we recruited 2,131 UK participants via Prolific Academic (<https://www.prolific.ac/>). The results showed that in the version without a third box, 68.7% of participants voted to Remain (the MV outcome). However, when the third box (Undecided) was added, 3.2% selected this option, reducing the MV to 66.7%.

This declining MV trend was replicated in the AI challenge scenario (whether positions should be reserved for humans or robots). We studied 2,131 UK participants and 2,150 Chinese participants recruited via Sojump (<https://www.wjx.cn/>). In the version without a third box, the MV outcome (81.1%) favored "positions should be reserved for humans." However, after adding the third box (Undecided), 5.7% selected this option, reducing the MV to 76.6%. In both studies, the magnitude of MV reduction exceeded the 1.9% margin by which the 2016 Brexit referendum surpassed the majority threshold—a margin sufficient to have changed history.

For the waste disposal issue, which currently concerns Chinese citizens deeply, adding a third box directly reversed the majority voting outcome. Results from 2,150 Chinese participants showed that in the version without a third box, the MV (51.4%) favored "changing the status quo" (building a new waste disposal plant)—remarkably similar to the 2016 Brexit referendum. However, after adding the third box (Undecided), 2.6% selected this option, shifting the MV (48.8%) to favor "maintaining the status quo" (not building a new plant).

The Brexit process remains incomplete, and the UK government has already paid a staggering price of £2 billion for these "regretted" Brexit votes (Owen & Lloyd, 2018). In our experiments, simply printing one small additional option box was sufficient to sway or even reverse MV outcomes. Therefore, if the demonstrations planned for October 19 in the UK succeed in pressing for a second Brexit referendum, we urge British policymakers to carefully examine our findings and consider recommendations from behavioral scientists regard-

ing “option addition” (e.g., Brams, 2016). Particularly when opposing public opinions are evenly matched—as in the 2016 Brexit referendum or the current waste disposal debate in China—governments should seriously consider whether to include a virtually costless small box: the “Undecided” option.

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## Appendix

**Brexit problem:** Prolific Academic (<https://www.prolific.ac/>) respondents from the UK (N = 2131)

If a second referendum were held, should the United Kingdom remain a member of the European Union or leave the European Union?

**AI challenge problem:** respondents from the UK and China (N = 4281)

If human employment is threatened by artificial intelligence, should a vacancy be left to a human being skilled in the job or should vacancy be filled by a robot?

**Waste disposal problem:** Sojump (<https://www.wjx.cn/>) respondents from China (N = 2150)

Should the status quo in the area around your residence be maintained (without waste disposal plants) or should a new waste disposal plant be built?

*Note: Figure translations are in progress. See original paper for figures.*

*Source: ChinaXiv – Machine translation. Verify with original.*