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Evidence from a Representative Survey Experiment

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We study anchoring effects in the elicitation of multidimensional beliefs within a single survey task using a representative sample of the German voting-age population. Respondents estimated government-spending levels across several domains (e.g., education, defense, social security), with randomized exposure to different informational anchors in one domain. Anchors significantly influence elicited beliefs in related domains and partially also shift respondents' policy preferences. While the anchors change absolute estimates, perceived government-spending rankings remain stable. These findings offer methodological guidance for survey design involving multidimensional belief elicitation in information-provision experiments.

Keywords: Anchoring, experiment, beliefs, survey, government spending

JEL Codes: D83, C83, C90.

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1. Introduction

Understanding how individuals form beliefs is central to studying economic decision-making. Researchers and policymakers increasingly rely on survey data to measure such beliefs to inform economic models and policy (Bernanke, 2007; Manski, 2018). Yet, designing surveys introduces unique considerations and challenges: respondents typically complete questionnaires quickly, with limited cognitive engagement, and provide or encounter information sequentially in ways that may anchor subsequent responses (Tourangeau et al., 2000).[1] Researchers might also intentionally provide respondents with reference points, e.g., to help forming expectations or contextualize estimates and reduce uncertainty when measuring unfamiliar quantities (Ansolabehere et al., 2013; Roth et al., 2022; Brañas-Garza et al., 2022).[2] Given the growing importance of survey experiments in generating high-quality data, it is essential to understand the challenges that potentially arise from survey design choices and develop methodological safeguards that can protect data quality and validity (Haaland et al., 2023).

We conducted an anchoring experiment to examine how providing informational anchors within surveys influences subsequent responses. Our focus is on eliciting multidimensional beliefs about government spending across multiple areas (culture, defense, public safety, education, and social security).[3] Specifically, we investigate the spillover effects of anchors by exploring how anchors in one domain influence beliefs in other domains. We use data from the *ifo Education Survey* (*ifo Bildungsbarometer*), an annual representative opinion survey conducted by the ifo Institute in Germany (Freundl et al., 2023). The survey was conducted between April and June 2017 with a total of $3,942$ respondents, representing the German voting age population (18 years and older). Our study addresses two key questions: First, do informational anchors in a specific domain (e.g., defense spending) influence belief formation in related domains (e.g., spending on education or public safety)? Second, do these belief shifts carry over to affect respondents' policy preferences?

Our findings show that exposure to informational anchors in one domain significantly influences respondents' spending beliefs in other domains, highlighting a strong cross-domain anchoring mechanism. Anchors appear to enhance the precision of estimates by offering a sense of the overall order of magnitude of government spending. However, the effectiveness of this mechanism depends critically on the chosen anchor. Only anchors that differ strongly from the spending beliefs elicited in the

[1] Since the seminal work of Tversky & Kahneman (1974), a large body of research has demonstrated that individuals' numerical estimates can be influenced by previously encountered values when relying heavily on initial information (*anchors*) when making subsequent judgments. This *anchoring effect* has been extensively studied in behavioral economics and psychology, showing that even arbitrary numerical cues can shape judgments in domains such as consumer behavior, financial decision-making, and legal sentencing (see Furnham & Boo, 2011; Schley & Weingarten, 2025, for literature reviews and meta analyses).

[2] For instance, several studies have shown that most people only have a vague understanding of macroeconomic quantities and relationships, highlighting the importance of using anchors when eliciting related beliefs to reduce measurement error (Coibion et al., 2023; Armona et al., 2018; Roth & Wohlfart, 2020; Manski, 2018).

[3] By multidimensional beliefs, we mean various beliefs individuals hold about outcomes across related domains. For example, Delavande & Zafar (2019) elicited students' beliefs (expected earnings, employment probability, etc.) conditioned on graduating or dropping out from five different schools. Besides multidimensional beliefs related to students' career expectations (Zafar, 2011), studies have also elicited multidimensional beliefs about personal finance, health, or the general economy (Manski & and, 2010), earnings and unemployment rates (Lergetporer et al., 2021), risk of HIV infections (Delavande & Kohler, 2015), retirement planning (Giustinelli & Shapiro, 2024), or parental investments in child development (Attanasio et al., 2019; Biroli et al., 2022).

control group, thereby recalibrating average beliefs about government spending, result in meaningful improvements in belief accuracy. Interestingly, beliefs about the relative ranking of spending across domains appear to be quite stable and largely unaffected by the provided anchors. This suggests that while anchors shift absolute estimates in their direction, they do not substantially alter the perceived ranking of spending domains. Further, we find that these shifted beliefs partially translate into changes in policy preferences, indicating that anchoring affects not only belief reporting but also normative judgments. Our results have important implications for designing surveys and interpreting elicited belief and preference measures – particularly when designing information-provision experiments or measuring multidimensional beliefs.

Our study contributes to two strands of literature. First, we add to the literature on survey methodology by systematically examining how cross-domain anchoring affects response quality in policy-relevant surveys measuring multidimensional beliefs (see e.g., Zafar, 2011). While anchoring effects are well-documented (Furnham & Boo, 2011; Schley & Weingarten, 2025), less is known about how these effects operate in population surveys designed to measure policy-related beliefs. We investigate whether the provision of factual government spending in one domain creates anchoring effects when respondents estimate spending in other domains. This extends previous methodological research by isolating cross-domain anchoring — a phenomenon with significant implications for surveys measuring multidimensional beliefs.

Second, we contribute to the growing literature on information provision experiments in economic contexts, such as inflation expectations (Coibion et al., 2018, 2019, 2023; Armantier et al., 2013; Cavallo et al., 2017; Manski, 2018), home prices (Armona et al., 2018; Fuster et al., 2022), educational expectations (Zafar, 2011; Stinebrickner & Stinebrickner, 2014; Boneva & Rauh, 2018; Delavande & Zafar, 2019), redistribution (Alesina et al., 2018; Karadja et al., 2017; Kuziemko et al., 2015; Lergetporer et al., 2020), immigration (Alesina & La Ferrara, 2005; Grigorieff et al., 2020; Haaland & Roth, 2023) or the size of government (Lergetporer et al., 2018; Cattaneo et al., 2020; Haaland & Roth, 2023). While some studies have explored how providing economic information shapes expectations about related indicators (Cavallo et al., 2017; Coibion et al., 2018, 2019; Roth & Wohlfart, 2020), our research explores spillover effects across different domains of government spending. Apart from unintended anchors, researchers may want to provide a reference point to reduce the uncertainty of unfamiliar quantities (Ansolabehere et al., 2013; Roth et al., 2022). Providing respondents with related figures further enables researchers to *indirectly* convey information about a quantity of interest, allowing for the elicitation of posterior beliefs without disclosing the study's purpose and thereby minimizing demand effects.[4] Moreover, although prior work has examined how information provision affects attitudes within the same policy domain (Lergetporer et al., 2018; Kuziemko et al., 2015), cross-domain spillover effects remain largely unexplored. We extend this literature by studying how information provision in one domain may inadvertently shape beliefs in related domains and influence subsequent policy preferences. Understanding these effects is crucial not only for researchers designing economic surveys, but also for policymakers

[4] In general, economic (survey) experiments seem relatively robust against experimenter demand effects (Mummolo & Peterson, 2019; de Quidt et al., 2018). However, concerns may still arise, particularly when eliciting posterior beliefs on the same measure where information was provided.

who rely on accurate public perceptions and seek to communicate (fiscal) information effectively.

The rest of the paper is structured as follows: Section 2 presents our data and experimental design. Section 3 presents our results, and Section 4 concludes.

2. Data and Empirical Strategy

The research draws from the 2017 ifo Education Survey, an annual opinion survey on education policy conducted in Germany.[5] The survey was administered by a leading German social science polling firm between April and June 2017. The sample covers a total of $4,081$ respondents. Internet-using respondents were drawn from a non-probabilistic online access panel using quota sampling based on the national marginal distributions of gender, age, and region. For the remaining 9% of respondents who reported not using the internet, trained interviewers conducted home visits, providing tablet computers and offering assistance to ensure respondents could complete the survey autonomously. The survey contained more than 30 questions on different topics of education policy, and also collected respondents' sociodemographic background characteristics. Item non-response rates for the key dependent variables are very low, and unrelated to treatment status (see balancing tests in Tables A1 and A2). After cleaning for item non-response, the sample consists of $3,942$ respondents.

2.1. The Survey Experiment

We implemented two between-subject experiment in the survey. In the first experiment, the treatment variation concerns the provision of factual annual governmental spending figures (anchors) in different domains (defense: 27 billion euros (`Low`), education: 95 billion euros (`Medium`), and social security: 227 billion euros (`High`)). The spending figures were sourced from Statistisches Bundesamt (2014), representing the most up-to-date data available at the time of data collection. We also include a control group that does not receive any informational anchor (`NoAnchor`). This anchoring experiment was implemented in one survey item in the first part of the survey, when eliciting government-spending beliefs (see Figure 1).

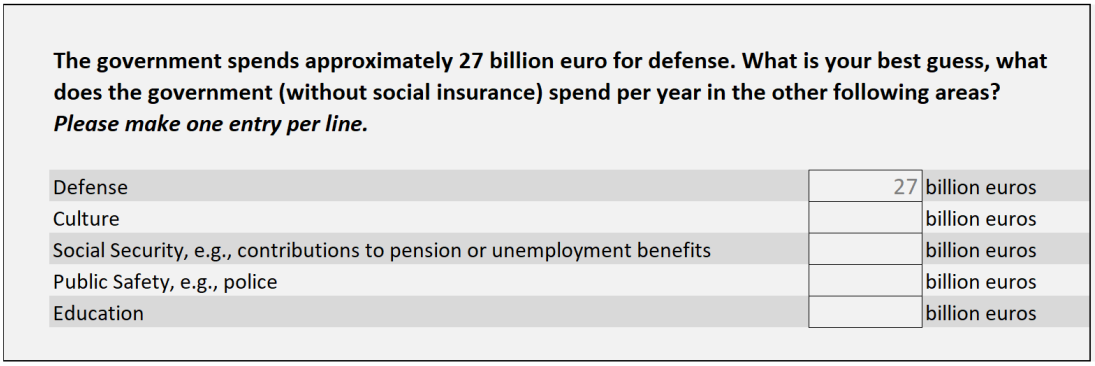
The treatment variation of the second experiment (`FullInfo`) was independently randomized and implemented in a separate survey item later in the survey, just before measuring respondents' government-spending preferences (see Figure 2). This treatment provides complete information on actual government-spending levels across all considered domains (culture: 10 billion euros, defense: 27 billion euros, public safety: 38 billion euros, education: 95 billion euros, and social security: 227 billion euros). The control group did not receive this full information.

The main focus of this study is to test whether exposure to different anchors – government spending in one domain – influences spending beliefs in other domains. Further, we test whether different anchors

[5] Data from the ifo Education Survey is available for scientific use (Freundl et al., 2023).

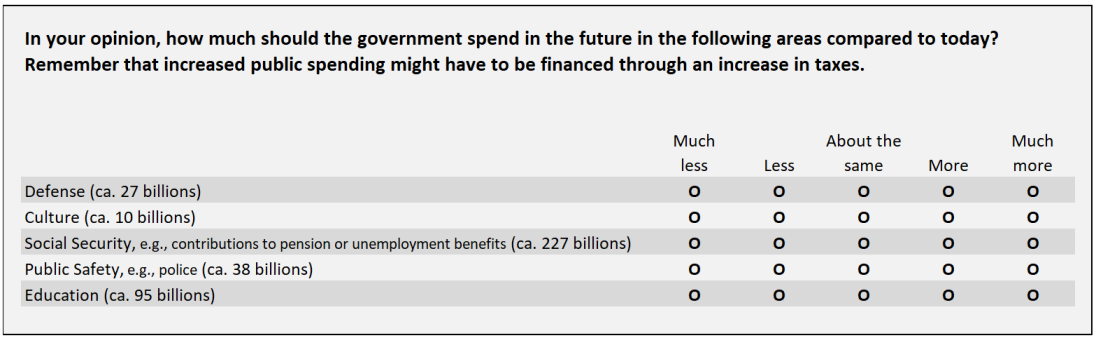
or full information about the size of the government affect stated policy preferences. Figure 3 illustrates the flow of the full experimental design.

Figure 1: Survey Item: Estimation of government spending



Note: Example of survey item with anchored on defense spending. Treatment variation: no information, 27 billion euro for defense, 227 billion euro for social security, and 95 billion euro for education. Respondents also stated how confident they were with their answer on a 7-point scale ranging from 1 ("*very unconfident*") to 7 ("*very confident*").

Figure 2: Survey Item: Eliciting policy preferences



Note: Example of survey item eliciting policy preferences for government spending. Treatment variation: no information (`NoInfo`) or full information (`FullInfo` – as shown in the figure) about actual government spending. The order of spending domains was random.

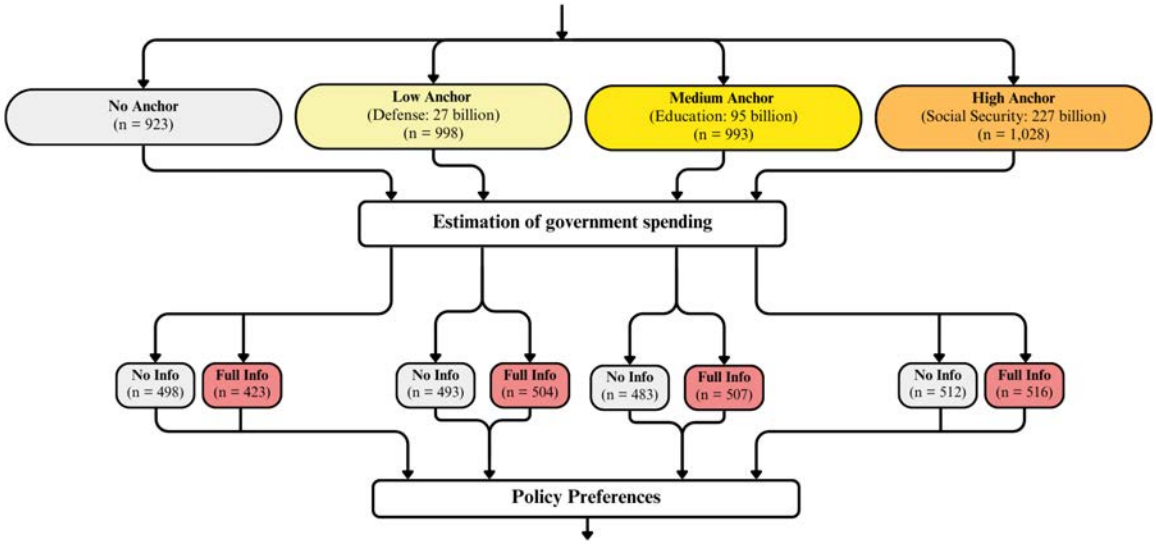
2.1.1. Econometric Model

We use the following regression model to analyze anchoring effects:

$$y_i = \alpha_0 + \alpha_1 Low_i + \alpha_2 Medium_i + \alpha_3 High_i + \epsilon_i \tag{1}$$

where y_i is the outcome of interest (e.g., beliefs about government-spending levels) for individual i, Low_i, $Medium_i$, $High_i$ are binary anchoring-treatment indicators, and ϵ_i is an error term. The average effects of providing the different anchors, α_1 to α_3, are identified because of the random assignment of treatment status. Therefore, adding control variables should not alter treatment-effect estimates.

Figure 3: Survey Flow



Note: Survey Flow: Attrition between first and second experiment: `NoAnchor` 2; `Low`: 1; `Medium`: 3; `High` 0.

To analyze treatment effects on government-spending preferences, we extend our model to take the two-stage treatment variation into account.

$$\begin{aligned} y_i = \beta_0 + \alpha_1 Low_i + \beta_2 Medium_i + \beta_3 High_i + \beta_4 FullInfo_i + \\ \beta_5 Low_i \times FullInfo_i + \\ \beta_6 Medium_i \times FullInfo_i + \\ \beta_7 High_i \times FullInfo_i + \epsilon_i \end{aligned} \tag{2}$$

where y_i is the outcome of interest (i.e., government-spending preferences) for individual i, Low_i, $Medium_i$, $High_i$ are binary anchoring-treatment indicators for the first stage, $FullInfo_i$ is the treatment indicator for the second stage, and ϵ_i is an error term. We also include interactions of the treatment indicators from both experiments. The average treatment effects, as well as their interaction effects, β_1 to β_7, are identified because of the random assignment of treatment status.

3. Results

We present our results in two steps. First, we provide descriptive results on government-spending beliefs (Section 3.1). Then, we show how our experimental treatments affect respondents' beliefs and

government-spending preferences (Section 3.2).

3.1. Descriptive Results on Beliefs regarding Government Spending

Respondents in the control group, who do not receive any informational anchors, hold widely dispersed beliefs about spending levels in the different categories. On average, they estimate annual spending to be 13.57 billion euros on culture (10-90 percentile range: 1 to 25 billion euro; true value: 10 billion euros), 40.47 billion euros on defense (10-90 percentile range: 1 to 100 billion euro; true value: 27 billion euros), 31.76 billion euros on public safety (10-90 percentile range: 1 to 60 billion euro; true value: 38 billion euros), 25.17 billion euros on education (10-90 percentile range: 1 to 50 billion euro; true value: 95 billion euros), and 55.01 billion euros on social security (10-90 percentile range: 1 to 120 billion euro; true value: 227 billion euros). As a result, spending beliefs are sometimes too high and sometimes too low compared to actual spending levels across categories. While average beliefs are fairly accurate for spending on culture and public safety, respondents tend to underestimate spending on education by 67.48 billion euros (-71%) and social security by 170.32 billion euros (-75%), while overestimating spending on defense by 15.99 billion euros (+59%).

Next, we analyze deviations between respondents' individual beliefs and the true values of government spending. First, we examine the absolute error, which is the difference between a respondent's spending-level belief and the true value. On average, respondents in the control group misperceive the size of government spending by 368 billion euros. Average absolute errors are 14 billion euros for culture, 39 billion euros for defense, 40 billion euros for public safety, 86 billion euros for education, and 201 billion euros for social security. Second, we assess whether respondents' beliefs fall within a reasonable range of the correct value. Our preferred classification is to classify a belief as correct if it lies within ±40% of the true value (Table A3).[6] Using this classification, 12.6% of beliefs in the control group are correct. Accuracy also varies by domain: only 6.7% of estimates for education and social security fall within the correct range, compared to 16.9% for public safety.

In addition to assessing absolute spending beliefs, we also examine whether respondents' answers reproduce the correct ranking of the relative size of the different spending domains. Only 2.8% of control-group respondents' spending beliefs accurately reflect the correct ranking of the different spending categories. Notably, 1,856 out of 3,942 respondents (47%) report identical spending beliefs for at least two categories, making an unambiguous ranking impossible. Among the remaining 2,086 respondents without ties, only 75 (3.6%) hold beliefs reflecting the correct ranking, making it only the eighth most common ranking overall (see Table A6). While many respondents correctly identify culture as the domain with the lowest level of government spending, they often underestimate spending on education compared to other domains.

Importantly, respondents appear aware of their limited knowledge about government-spending levels. After stating their beliefs, we asked respondents "*How confident are you that you have given an approx-*

[6] When analyzing treatment effects on this accuracy measure, we verify that using alternative thresholds of ±30% and ±50% do not qualitatively change our results. Results are summarized in Tables A4 and A5.

imately correct answer?", with responses ranging from 1 ("*very unconfident*") to 7 ("*very confident*"). The average rating is only 2.51 on the 7-point scale. In the next section, we test how the different informational anchors affect these different measures of beliefs accuracy and confidence.

3.2. Experimental Results

3.2.1. Treatment Effects on Beliefs regarding Government Spending

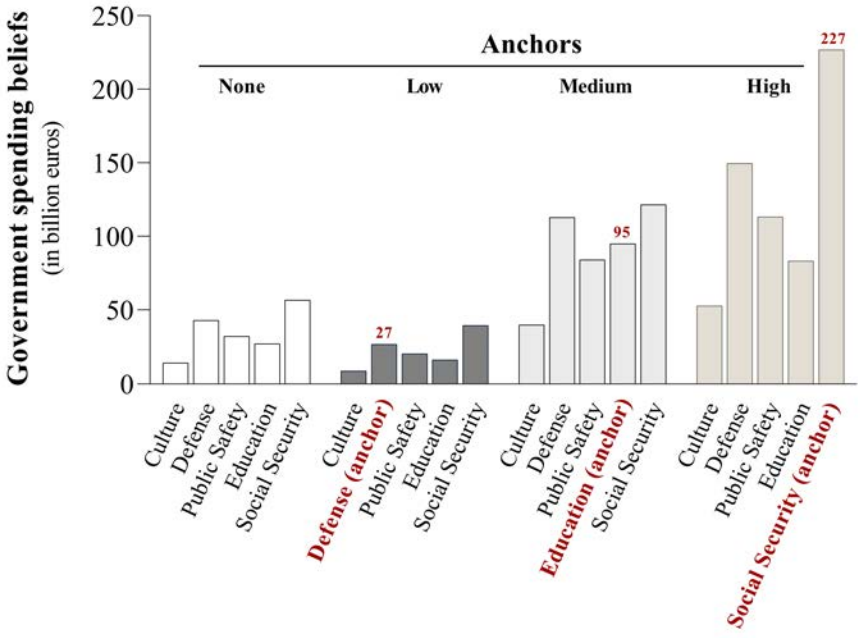
Thus far, we have examined the extent to which respondents in the control group – who did not receive any informational anchors – (mis)perceive government-spending levels. We now turn to whether providing anchors in one spending category can improve belief accuracy for the other domains. Exposure to anchors leads to significant shifts in respondents' beliefs in other domains, aligning them with the direction of the anchors (see Figure 4 and Figure 5). Specifically, respondents exposed to a `Medium` anchor (i.e., education spending of 95 billion euros) have higher spending beliefs in all domains compared to those with no anchor. Those presented with a `High` anchor (i.e., social security spending of 227 billion euros) report even higher spending beliefs. In contrast, respondents exposed to the `Low` anchor (i.e., defense spending of 27 billion euros) report lower spending beliefs across all domains except culture, compared to the control group. Interestingly, anchoring effects are stronger when the provided anchor is further from the control group's beliefs, suggesting that only anchors which challenge pre-existing beliefs produce significant effects.

Next, we study how informational anchors affect the accuracy of respondents' beliefs. We find that providing anchors improves belief accuracy, as spending beliefs of respondents in the treatment groups are less likely to be outliers compared to those in the control group (Table A3). This effect is most pronounced in the `Medium`-anchor treatment. When examining differences between beliefs and true spending levels, a more nuanced pattern emerges. Respondents exposed to a `Medium` or `High` anchor show significantly higher absolute errors than those in the control group (Table A7). We observe no significant difference for those in the `Low`-anchor treatment. This pattern may be explained by an anchoring-induced belief adjustment: while anchors improve accuracy for high-expenditure domains like education and social security, they also lead to greater overestimations for low-spending domains, thereby increasing the overall error.

Turning to the estimated rankings of the size of the different government-spending categories, we find that anchors do not improve beliefs. Regressing the probability to hold correct ranking beliefs on treatment dummies, Figure 6 shows that these probabilities are unaffected by the anchors (see left and middle panel). This general pattern is also reflected in the average beliefs depicted in Figure 4, which show that while anchors shift beliefs toward the anchor value, they do not change the relative ordering of spending categories. The exception is the `Medium`-anchor, which improves the average ranking by increasing the share of respondents that correctly rank spending on education and public safety.

So far, our results show that respondents' spending beliefs across different categories are strongly influenced by anchors providing spending levels for other categories. Beyond belief shifts, we also explore

Figure 4: Beliefs about government spending



Note: This figure presents respondents' beliefs about government spending across five domains – culture, defense, public safety, education, and social security – separated by experimental conditions. The bars show the mean estimates for each group, with numeric labels indicating the anchor value provided in that condition.
Source: ifo Education Survey 2017.

whether anchors affect respondents' confidence in their beliefs, measured from 1 ("*very unconfident*") to 7 ("*very confident*"). Respondents exposed to the `Low`-anchor condition report significantly higher confidence than the control group, while the `Medium`- and `High`-anchor conditions do not affect confidence (Figure 6). One possible explanation is that participants generally underestimate the size of government. As a result, a low anchor may boost confidence by aligning with prior beliefs, while higher anchors, which deviate markedly from those prior beliefs, do not.

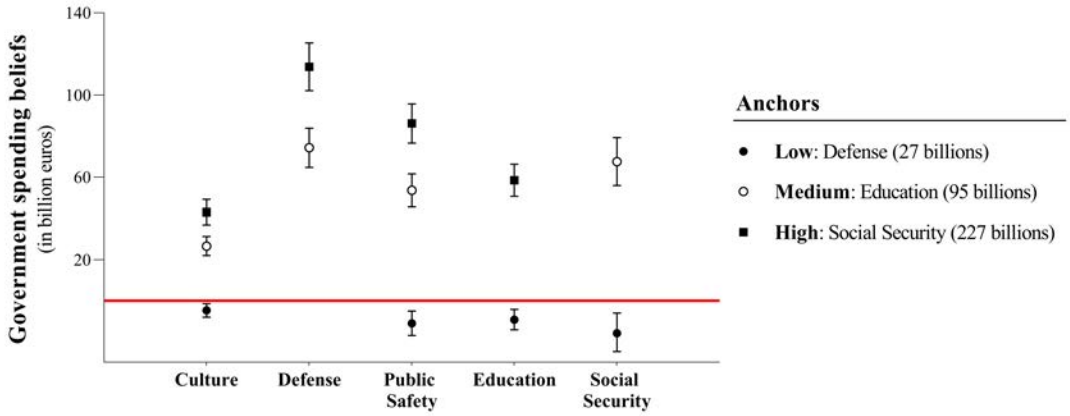
Overall, our results show that the choice of anchor has substantial effects on government-spending beliefs, a phenomenon that should be considered when eliciting multidimensional beliefs.

3.2.2. Treatment Effects on Preferences for Government Spending

In addition to the partial information treatment provided by the different anchors in the first part of the survey, we also implemented a second, independently randomized treatment before measuring government-spending preferences later in the survey (see Figure 3). At this stage, respondents were randomly assigned to receive either *full* information about actual government-spending levels in all categories (`FullInfo`) or no additional information (`NoInfo`).

To isolate the effect of first-stage anchors on downstream policy preferences, we first analyze respondents from the control group in the second experiment -— those who did not receive full spending

Figure 5: Effects of different anchors on government spending beliefs



Note: Coeffient plot: This plot shows the effect of exposure to informational anchors on respondents' beliefs about government spending. Beliefs are based on the OLS regressions with clustered standard errors (Table A9). Error bars represent 95% confidence intervals.
Source: ifo Education Survey 2017.

information. Among those with no anchor, a clear pattern emerges: respondents express a preference for increased spending on education, public safety, and social security, and for reduced spending on culture and defense (see control means in Table A10).

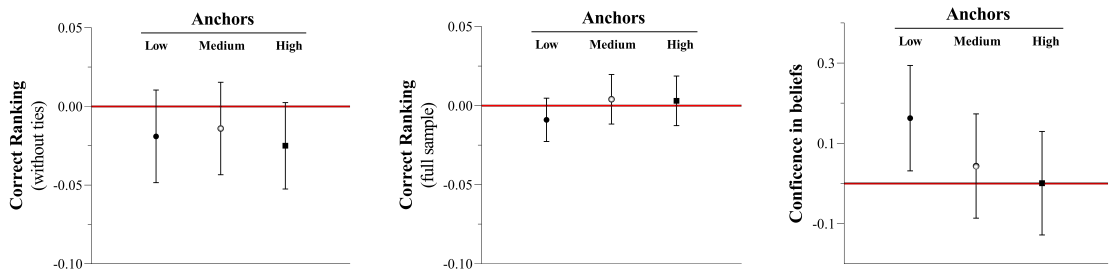
Interestingly, all informational anchors from the first stage have measurable effects on spending preferences. Compared to those without an anchor, respondents exposed to an anchor tend to prefer lower future spending in the domain associated with that anchor, while their preferences in other domains remain largely unchanged (Figure 7).[7] Thus, providing informational anchors earlier in the survey can be used as a method to subtly induce belief updating among respondents. This approach has arguably lower salience than typical information treatments, which could help reduce experimenter-demand effects (Haaland et al., 2023).

We now turn to the effect of providing respondents with full information about government-spending levels on their policy preferences. Figure 8 shows how information on actual spending levels influences support for future spending increases. Compared to the control group, those in the `FullInfo` treatment consistently express lower support for government spending increases across all categories, a pattern consistent with previous studies (Lergetporer et al., 2018; Cattaneo et al., 2020). This suggests a belief-adjustment mechanism: since respondents often tend to underestimate government-spending levels, learning about the actual – and substantially higher – spending levels prompts them to revise their preferences downward.

Finally, we examine the interaction effects between the anchors and the `FullInfo` treatment on spending preferences. This analysis helps to understand how providing anchors when eliciting prior beliefs influences the effects of full information. Table A10 shows the results of fully interacted regression models of government-spending preferences in the different categories on all treatment dummies. Compar-

[7] An exception is the culture domain, where the high anchor leads to an even stronger reduction in preferred future spending.

Figure 6: Effects of different anchors on ranking-beliefs and confidence.



Note: Coeffient plot: This plot shows the effects of informational anchors on (i) probability of correct ranking beliefs about government spending domains excluding tied rankings (left panel), (ii) probability of correct ranking beliefs for all respondents (middle panel), and (iii) respondents' confidence in their beliefs regarding government spending (right panel). Estimates are based on the OLS regressions with clustered standard errors (Table A8). Error bars represent 95% confidence intervals.
Source: ifo Education Survey 2017.

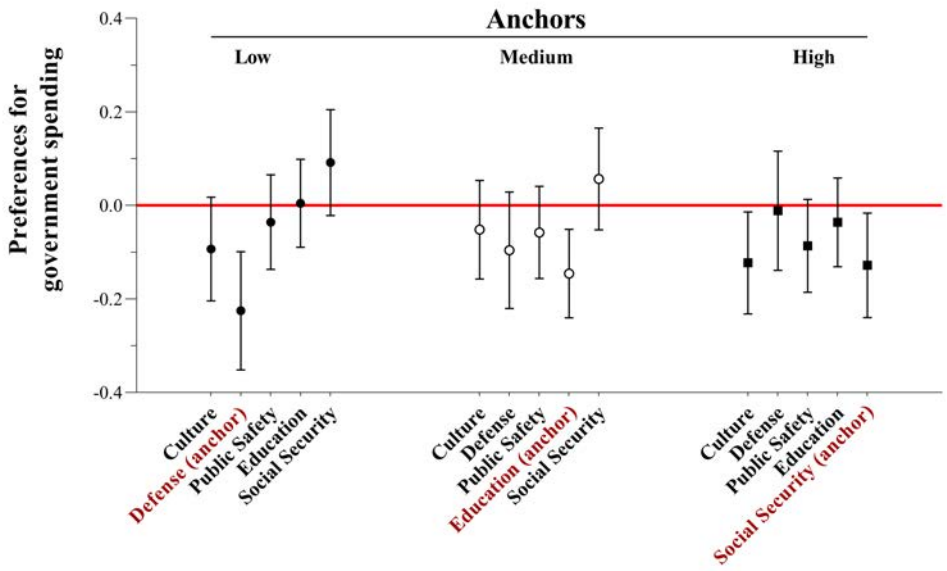
ing the effect of the `FullInfo` treatment without anchors (first line) to the effects within the different anchor groups reveals important interaction effects (see marginal effects in the lower part of the table). For instance, for defense spending, each anchor eliminates the effects of the `FullInfo` treatment. A different pattern emerges for social security spending, where the Low and Medium anchors amplify the negative effects of the `FullInfo` treatment. We observe similar interactions in the other spending categories, with the different anchors sometimes amplifying, sometimes attenuating, and sometimes not affecting the `FullInfo` effects. Exploring the reasons for differences in these effects across spending domains is an interesting avenue for future research. In sum, this analysis demonstrates that anchoring prior beliefs can significantly influence subsequent information treatment effects. These intertwined effects should be carefully considered when designing surveys.

4. Conclusion

Our study provides new evidence on how survey design -— specifically, the inclusion of numerical anchors when eliciting beliefs -— can shape belief elicitation and policy preferences through cross-domain anchoring effects. Using data from a large-scale, representative survey in Germany, we show that providing informational anchors about government spending levels in one domain systematically influences respondents' spending beliefs in other domains. These findings suggest that anchoring effects extend across domains, influencing multidimensional belief elicitation.

Importantly, the effectiveness of anchors depends on respondents' prior beliefs. Anchors that differ from control-group beliefs can improve accuracy by recalibrating respondents' estimates of public spending, while anchors that are close to control-group beliefs are largely ineffective, likely because they do not induce belief updating. While anchors shift absolute spending beliefs, they do not alter the perceived ranking of spending categories. We find that updated beliefs can influence government-spending prefer-

Figure 7: Effects of different anchors on policy preferences



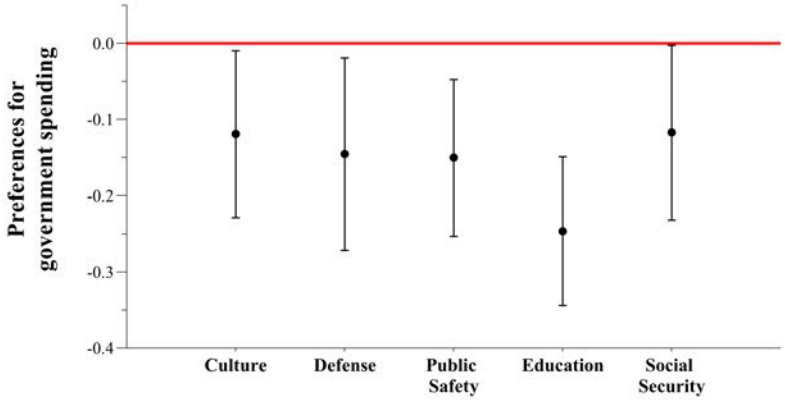
Note: Coeffient plot: This plot shows the effect of exposure to informational anchors on respondents' preferences for government expenditures. Estimates are based on the OLS regressions with clustered standard errors (Table A10). Error bars represent 95% confidence intervals. We ask respondents: "*In your opinion, how much should the government spend in the future in the following areas compared to today? Remember that increased public spending might have to be financed through an increase in taxes.*", which they could answer on a 5-point scale form 1 ("*Much less*") to 5 ("*Much more*" (see Figure 2). Source: ifo Education Survey 2017.

ences down the line, underscoring the broader methodological relevance of anchoring effects in survey settings.

Our findings advance survey-methodological literature by documenting how cross-domain anchoring effects can affect beliefs elicited in multidimensional belief elicitation tasks. This has practical implications for researchers aiming to measure beliefs reliably across domains – whether in public finance, education, health, or social policy. Further, we add to the growing literature on information provision experiments by showing that even indirect information – when embedded as informational anchors anchors – can induce beliefs- and preference updating.

These insights caution against assuming that information treatments within surveys operate in isolation and emphasize the need for careful design when measuring beliefs across multiple dimensions. Future research should further explore the mechanisms behind cross-domain anchoring and examine how design features – such as the sequence of belief questions or the salience of anchors– amplify or mitigate these effects.

Figure 8: Effects of information about government spending on policy preferences



Note: The coefficient plot shows the effects of receiving full information about government spending on respondents' spending preferences. Estimates are based on the OLS regressions with robust standard errors for the sub-sample that did not receive the anchor (Table A10). Error bars represent 95% confidence intervals.
Source: ifo Education Survey 2017.

Declaration of Generative AI and AI-assisted technologies in the writing process

While preparing this manuscript, the authors used *OpenAI*, *Claude*, and *DeepL Writing* to improve readability and language. After using these tools, the authors reviewed and edited the content as needed. We take full responsibility for the content of the publication.

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Appendix

Appendix A Additional Tables

Table A1: Balancing table: Experiment I: Anchoring

	NoAnchor		Anchors			
	Mean	Std. Dev.	Mean	Std. Dev.	Diff. in Means	p-value
			Low Anchor			
Being female	0.54	0.50	0.55	0.50	0.01	0.660
Age	47.12	17.20	47.06	18.09	-0.06	0.938
University degree	0.25	0.43	0.24	0.43	-0.01	0.724
Living in West Germany	0.77	0.42	0.74	0.44	-0.03	0.171
Net household income	2361.02	1423.15	2308.33	1516.51	-52.69	0.428
Born in Germany	0.94	0.23	0.96	0.20	0.01	0.134
Being employed	0.57	0.50	0.52	0.50	-0.05*	0.039
Answer mode	1.09	0.29	1.10	0.30	0.01	0.519
Item non-response	0.03	0.17	0.02	0.15	-0.01	0.344
			Medium Anchor			
Being female	0.54	0.50	0.53	0.50	-0.01	0.575
Age	47.12	17.20	47.46	17.77	0.34	0.661
University degree	0.25	0.43	0.24	0.43	0.00	0.865
Living in West Germany	0.77	0.42	0.75	0.43	-0.02	0.217
Net household income	2361.02	1423.15	2247.95	1332.60	-113.06	0.070
Born in Germany	0.94	0.23	0.94	0.23	0.00	0.906
Being employed	0.57	0.50	0.54	0.50	-0.03	0.121
Answer mode	1.09	0.29	1.10	0.31	0.01	0.298
Item non-response	0.03	0.17	0.04	0.20	0.01	0.162
			High Anchor			
Being female	0.54	0.50	0.54	0.50	-0.01	0.809
Age	47.12	17.20	45.81	17.86	-1.31	0.094
University degree	0.25	0.43	0.24	0.43	0.00	0.843
Living in West Germany	0.77	0.42	0.78	0.42	0.00	0.799
Net household income	2361.02	1423.15	2367.63	1459.07	6.61	0.919
Born in Germany	0.94	0.23	0.95	0.21	0.01	0.432
Being employed	0.57	0.50	0.54	0.50	-0.03	0.190
Answer mode	1.09	0.29	1.08	0.27	-0.01	0.487
Item non-response	0.03	0.17	0.04	0.19	0.01	0.530

Note: Group means and standard deviations for three comparisons: no anchor vs. low anchor, no anchor vs. medium anchor and no anchor vs. high anchor. Size of full sample including item non-response observations: N = 4,081 observations, size of sub-samples: N = 953 in the control group, N = 1,023 in the Low Anchor group, N = 1,038 in the Medium Anchor group and N = 1,067 in the High Anchor group.
Source: ifo Education Survey 2017. *p<.05; **p<.01; ***p<.001

Table A2: Balancing table: Experiment II: Full information

	No Information		**Full Information**			
	Mean	Std. Dev.	Mean	Std. Dev.	Diff. in Means	p-value
Being female	0.55	0.50	0.53	0.50	-0.01	0.412
Age	46.47	17.65	47.24	17.84	0.77	0.166
University degree	0.24	0.43	0.24	0.43	0.00	0.721
Living in West Germany	0.77	0.42	0.75	0.43	-0.02	0.104
Net household income	2332.50	1455.17	2309.22	1414.44	-23.29	0.607
Born in Germany	0.95	0.21	0.95	0.22	-0.01	0.361
Being employed	0.55	0.50	0.54	0.50	-0.01	0.704
Answer mode	1.09	0.29	1.10	0.30	0.01	0.476
Item non-response	0.01	0.10	0.01	0.10	0.00	0.915

Note: Group means and standard deviations for the comparisons no information (control group) and full information (treatment group). Size of full sample including item non-response observations: N = 4,081 observations, size of sub-groups: N = 2,058 for the No Information group and N = 2,023 for the Information group.
Source: ifo Education Survey 2017. *p<.05; **p<.01; ***p<.001

Table A3: Anchoring effects on the accuracy of spending beliefs (probability of outliers)

	Dependent variable: Probability of a spending belief to be an outlier					
	All	Defense	Education	Social Security	Culture	Public Safety
	(1)	(2)	(3)	(4)	(5)	(6)
Low Anchor	-0.024^{**}		0.040^{***}	0.026^{*}	-0.152^{***}	-0.049^{**}
	(0.008)		(0.010)	(0.010)	(0.019)	(0.018)
Medium Anchor	-0.081^{***}	0.004		-0.181^{***}	-0.006	-0.083^{***}
	(0.009)	(0.017)		(0.016)	(0.017)	(0.018)
High Anchor	-0.045^{***}	0.069^{***}	-0.183^{***}		0.025	-0.032
	(0.009)	(0.015)	(0.016)		(0.016)	(0.018)
Control Mean[1]	0.874	0.833	0.933	0.933	0.842	0.831
Observations	16,691	2,944	2,949	2,914	3,942	3,942
Adjusted R^2	0.006	0.008	0.093	0.081	0.031	0.004

Note: The table depicts the probability for a public spending belief to be an outlier measured as being ± 40% away from the actual spending value in the respective domain. Column 1 reports results over all spending categories while columns 2 to 6 report results for each spending category. We report clustered standard errors in column 1 and robust standard errors in columns 2 to 6.
Source: ifo Education Survey 2017. *p<.05; **p<.01; ***p<.001
[1]Mean of the outcome variable in the control group.

Table A4: Anchoring effects on the accuracy of spending beliefs (probability of outliers)

	Dependent variable: Probability of a spending belief to be an outlier					
	All	Defense	Education	Social Security	Culture	Public Safety
	(1)	(2)	(3)	(4)	(5)	(6)
Low Anchor	-0.017^{*}		0.032^{***}	0.022^{**}	-0.144^{***}	-0.038^{**}
	(0.007)		(0.008)	(0.008)	(0.018)	(0.015)
Medium Anchor	-0.046^{***}	0.003		-0.104^{***}	-0.013	-0.022
	(0.008)	(0.017)		(0.013)	(0.016)	(0.014)
High Anchor	-0.034^{***}	0.069^{***}	-0.177^{***}		0.018	0.012
	(0.008)	(0.015)	(0.015)		(0.016)	(0.013)
Control Mean[1]	0.902	0.842	0.949	0.961	0.854	0.904
Observations	16,691	2,944	2,949	2,914	3,942	3,942
Adjusted R^2	0.006	0.008	0.093	0.081	0.031	0.004

Note: The table depicts the probability for a public spending belief to be an outlier measured as being ± 30% away from the actual spending value in the respective domain. Column 1 reports results over all spending categories while columns 2 to 6 report results for each spending category. We report clustered standard errors in column 1 and robust standard errors in columns 2 to 6.
Source: ifo Education Survey 2017. *p<.05; **p<.01; ***p<.001
[1]Mean of the outcome variable in the control group.

Table A5: Anchoring effects on the accuracy of spending beliefs (probability of outliers)

	Dependent variable: Probability of a spending belief to be an outlier					
	All	Defense	Education	Social Security	Culture	Public Safety
	(1)	(2)	(3)	(4)	(5)	(6)
Low Anchor	-0.074^{***}		0.042^{***}	0.027^{*}	-0.268^{***}	-0.139^{***}
	(0.010)		(0.013)	(0.011)	(0.022)	(0.021)
Medium Anchor	-0.090^{***}	0.015		-0.225^{***}	0.013	-0.076^{***}
	(0.010)	(0.019)		(0.017)	(0.021)	(0.020)
High Anchor	-0.056^{***}	0.093^{***}	-0.254^{***}		0.065^{**}	-0.016
	(0.010)	(0.018)	(0.018)		(0.020)	(0.020)
Control Mean[1]	0.810	0.768	0.896	0.921	0.704	0.763
Observations	16,691	2,944	2,949	2,914	3,942	3,942
Adjusted R^2	0.006	0.010	0.119	0.103	0.075	0.014

Note: The table depicts the probability for a public spending belief to be an outlier measured as being ± 50% away from the actual spending value in the respective domain. Column 1 reports results over all spending categories while columns 2 to 6 report results for each spending category. We report clustered standard errors in column 1 and robust standard errors in columns 2 to 6.
Source: ifo Education Survey 2017. *p<.05; **p<.01; ***p<.001
[1]Mean of the outcome variable in the control group.

Table A6: Rankings of government spending categories

First	Second	Third	Fourth	Fifth	Obs.	Frequency
Culture	Education	Public Safety	Defense	Social Security	229	10.98%
Culture	Education	Public Safety	Social Security	Defense	155	7.43%
Culture	Education	Defense	Public Safety	Social Security	145	6.95%
Culture	Public Safety	Education	Defense	Social Security	123	5.90%
Culture	Education	Social Security	Public Safety	Defense	108	5.18%
Culture	Public Safety	Defense	Education	Social Security	89	4.27%
Culture	Defense	Education	Public Safety	Social Security	77	3.69%
Culture	**Defense**	**Public Safety**	**Education**	**Social Security**	**75**	**3.60%**

Note: This table presents the eight most common spending rankings reported by respondents. The first column shows domains ranked as lowest spending, while the fifth column shows domains ranked as highest spending. Respondents produced 108 different rankings (excluding ties). Based on actual government spending levels, the correct ranking is the eight most frequent one.
Source: ifo Education Survey 2017.

Table A7: Anchoring effects on the accuracy of spending beliefs (absolute difference)

	Dependent variable: Abs. difference between spending beliefs and actual spending levels					
	All	Defense	Education	Social Security	Culture	Public Safety
	(1)	(2)	(3)	(4)	(5)	(6)
Low Anchor	0.781		-5.497^{**}	-5.668^{*}	-7.777^{***}	-15.028^{***}
	(1.721)		(1.882)	(2.814)	(1.608)	(2.702)
Medium Anchor	7.312^{**}	54.190^{***}		-55.034^{***}	18.931^{***}	20.798^{***}
	(2.360)	(4.632)		(3.589)	(2.271)	(3.674)
High Anchor	11.066^{***}	94.643^{***}	-13.948^{***}		35.887^{***}	53.010^{***}
	(3.072)	(5.660)	(2.877)		(3.058)	(4.448)
Control Mean[1]	76.098	39.005	85.735	201.427	14.114	40.210
Observations	16,691	2,944	2,949	2,914	3,942	3,942
Adjusted R^2	0.002	0.086	0.011	0.116	0.087	0.089

Note: The table shows OLS regression results for regressing the absolute difference between spending beliefs and actual spending levels on the anchor treatment. Column 1 reports results over all spending categories while columns 2 to 6 report results for each spending category. We report clustered standard errors in column 1 and robust standard errors in columns 2 to 6.
Source: ifo Education Survey 2017. *p<.05; **p<.01; ***p<.001
[1]Mean of the outcome variable in the control group.

Table A8: Anchoring effects on ranking-beliefs and confidence in beliefs.

	Dependent variable:		
	Correct Rank (w/o Ties)	Correct Rank (full sample)	Confidence in beliefs
	(1)	(2)	(3)
Low Anchor	−0.019	−0.009	0.163*
	(0.015)	(0.007)	(0.067)
Medium Anchor	−0.014	0.004	0.044
	(0.015)	(0.008)	(0.066)
High Anchor	−0.025*	0.003	0.001
	(0.014)	(0.008)	(0.066)
Control Mean[1]	0.053	0.028	2.511
Observations	2,086	3,942	3,941

Note: The table reports results from OLS regressions. In column 1, we regress a dummy variable equaling 1 if respondents indicate the actual order of government spending levels correctly (excluding observations with ties), and 0 otherwise. Column 2 repeats the analysis but including tied observations (we assume an ordering of tied spending categories). In column 3, we regress the confidence level of government spending beliefs on the anchor treatment. We report robust standard errors.
Source: ifo Education Survey 2017. *p<.05; **p<.01; ***p<.001
[1] Mean of the outcome variable in the control group.

Table A9: Anchoring effects on beliefs about government spending

	Dependent variable: Beliefs about government spending					
	All	Defense	Education	Social Security	Culture	Public Safety
	(1)	(2)	(3)	(4)	(5)	(6)
Low Anchor	−12.034***		−9.251***	−15.832***	−4.743**	−11.038***
	(2.521)		(2.531)	(4.785)	(1.681)	(3.058)
Medium Anchor	57.459***	74.228***		67.469***	26.600***	53.511***
	(3.387)	(4.890)		(5.949)	(2.354)	(4.088)
High Anchor	69.836***	113.653***	58.434***		43.005***	86.068***
	(3.841)	(5.928)	(3.981)		(3.143)	(4.874)
Control Mean[1]	33.194	40.467	25.166	55.008	13.574	31.755
Observations	16,691	2,944	2,949	2,914	3,942	3,942
Adjusted R^2	0.115	0.113	0.145	0.094	0.106	0.161

Note: The table shows OLS regression results from regressing respondents' government spending beliefs on the anchor treatment. Column 1 reports results over all spending categories while columns 2 to 6 report results for each spending category. We report clustered standard errors in column 1 and robust standard errors in columns 2 to 6.
Source: ifo Education Survey 2017. *p<.05; **p<.01; ***p<.001
[1]Mean of the outcome variable in the control group.

Table A10: Treatment effects on preferences for government spending

	Dependent variable: Government spending preferences				
	Defense	Education	Social Security	Culture	Public Safety
	(1)	(2)	(3)	(4)	(5)
FullInfo	−0.146*	−0.247***	−0.117*	−0.119*	−0.150**
	(0.064)	(0.050)	(0.058)	(0.056)	(0.052)
Low Anchor	−0.225***	0.004	0.091	−0.093	−0.036
	(0.064)	(0.048)	(0.058)	(0.056)	(0.052)
Medium Anchor	−0.096	−0.146**	0.056	−0.052	−0.058
	(0.064)	(0.048)	(0.055)	(0.054)	(0.050)
High Anchor	−0.012	−0.036	−0.128*	−0.123*	−0.086
	(0.065)	(0.048)	(0.057)	(0.056)	(0.051)
FullInfo × Low Anchor	0.189*	−0.020	−0.105	0.219**	0.017
	(0.090)	(0.069)	(0.082)	(0.078)	(0.074)
FullInfo × Medium Anchor	0.224*	0.033	−0.143	0.185*	0.142
	(0.089)	(0.070)	(0.080)	(0.076)	(0.073)
FullInfo × High Anchor	0.174	0.090	−0.009	0.227**	0.152*
	(0.090)	(0.069)	(0.083)	(0.077)	(0.073)
Marginal Effects of FullInfo:					
Low Anchor	0.043	-0.267***	-0.222***	0.099	-0.133*
	(0.063)	(0.049)	(0.058)	(0.054)	(0.053)
Medium Anchor	0.078	-0.214***	-0.261***	0.066	-0.009
	(0.062)	(0.049)	(0.055)	(0.052)	(0.051)
High Anchor	0.029	-0.157**	-0.126*	0.108*	0.002
	(0.062)	(0.048)	(0.059)	(0.054)	(0.051)
Control Mean[1]	2.779	4.036	3.618	2.994	3.871
Observations	3,936	3,936	3,936	3,936	3,936

Note: Table shows OLS regression results of respondents' preferences for government spending on the full information treatment, anchor treatment and an interaction effect. The lower panel additionally reports marginal effects of the full information treatment. Respondents indicate whether they want to spend a lot less (1), less (2), roughly the same (3) more (4) or a lot more (5). Columns 1 to 5 report results for spending categories separately.
Source: ifo Education Survey 2017. *p<.05; **p<.01; ***p<.001
[1]Mean of the outcome variable in the control group.

Appendix B Wording (translated) of relevant survey items

[We show the translated survey items for the question wording in `NoAnchor` and `NoInfo`.]

What is your best guess, what does the government (without social insurance) spend per year in the other following areas?

Please make one entry per line.

Defense	_____	billion euros
Culture	_____	billion euros
Social Security, e.g. contributions to pension or unemployment benefits	_____	billion euros
Public Safety, e.g. police	_____	billion euros
Education	_____	billion euros

In your opinion, how much should the government spend in the future in the following areas compared to today?

Remember that increased public spending might have to be financed through an increase in taxes.

	Much less	Less	About the same	More	Much more
Defense	O	O	O	O	O
Culture	O	O	O	O	O
Social Security, e.g. contributions to pension or unemployment benefits	O	O	O	O	O
Public Safety, e.g. police	O	O	O	O	O
Education	O	O	O	O	O

I am ...

- o Female
- o Male

When were you born?

Month: _____

Year: _____

What is your highest school degree?

- o No general school leaving certificate
- o Elementary school certificate
- o Secondary school certificate
- o Advanced technical college certificate
- o High school diploma
- o I am currently a student

What professional training degree do you have?

Please tick all that apply.

- o I do not have a professional training and am not in professional training.
- o I have completed professional-in-company training (apprenticeship) or professional -school training (professional school, commercial school).
- o I have completed training at a technical school, master craftsman school, technical school, professional- or technical academy.
- o I have a polytechnic degree (e.g., diploma, bachelor, master).
- o I have a university degree (e.g., diploma, state examination, bachelor, master).
- o I have another professional degree.
- o I am still in professional training (trainee, apprentice, professional-/ commercial school).
- o I am a student.

In which state do you live?

[List with federal states]

What is the total monthly net income of your household?

This means the sum resulting from wages, salary, income from self-employment, pension, or retirement pension, in each case after deduction of taxes and social security contributions. Please also include income from public assistance, income from renting, leasing, housing allowance, child benefit, and other income.

- o below 400 Euro
- o 400 until below 500 Euro
- o 500 until below 750 Euro
- o 750 until below 1.000 Euro
- o 1.000 until below 1.250 Euro
- o 1.250 until below 1.500 Euro
- o 1.500 until below 1.750 Euro
- o 1.750 until below 2.000 Euro
- o 2.000 until below 2.250 Euro
- o 2.250 until below 2.500 Euro
- o 2.500 until below 2.750 Euro
- o 2.750 until below 3.000 Euro
- o 3.000 until below 3.250 Euro
- o 3.250 until below 3.500 Euro
- o 3.500 until below 3.750 Euro
- o 3.750 until below 4.000 Euro
- o 4.000 until below 5.000 Euro
- o 5.000 Euro and more

What describes your current employment status most accurately?

- o Student, apprentice
- o Full-time employed
- o Part-time employed
- o Self-employed
- o Unemployed
- o Housewife/househusband
- o Retired
- o Other employment status, namely ...

Were you born in Germany?

- o Yes
- o No

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