

The times they are a-changin’:
How political attitudes change with energy prices

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Abstract

We study the impact of the 2022-2023 energy crisis in Germany on changes in political support. We collect 3 waves of panel data to measure how political attitudes change with increasing energy prices for households. Our difference-in-differences estimation exploits unique features of the German energy sector’s billing routines, which allows for a quasi-experimental design. We show that increases in electricity payments lead to a decline in support for democratic institutions, with effects intensifying over time.

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1 Introduction

The Russian invasion of Ukraine has led to an unprecedented pressure on European energy markets. Prior to the war, Russian gas represented 32.1% of primary energy used by EU households, significantly higher in countries such as Hungary or Germany. In the aftermath of the Russian invasion, European energy prices have gone up dramatically. For European households, natural gas prices have increased by almost 90% (Eurostat, 2023b). Electricity prices have followed a similar pattern, with a 31% increase between 2021 and 2023 (Eurostat, 2023a).¹ Price increases on wholesale markets were sometimes much bigger but were moderated by the fact that the consumer pays a price that includes many other items some of which were fixed or even reduced to counteract the energy price shock.

Due to its large reliance on Russian energy imports prior to the war, the largest economy of the EU, Germany, has been heavily affected by this shock. Since 2021, electricity and gas prices have increased by approximately 30% and 100%. While this shock is likely to dissipate over time with greater a diversification in energy sources, stringent climate polices will continue to put the energy market under pressure. Various increases in fossil fuel taxes and carbon levies have been planned (including the EU-ETS 2 covering the building and transport sector), or postponed (e.g., carbon levy in Germany).

While Germany, in line with the entire EU, has managed to starkly reduce its dependency of Russian energy imports and keep economic costs to a minimum (see e.g. Gariano et al., 2022, for an overview), the political costs are not yet understood. Populist and EU-sceptic parties are rising all over Europe, including in Italy ("*Fratelli d'Italia*"), the Netherlands ("*Partij voor de Vrijheid*"), Sweden ("*Sverigedemokraterna*"), and France ("*Rassemblement National*"). In Germany, the right wing populist / extremist party "*Alternative für Deutschland*" (AfD), which strongly rejects the German government's support for Ukraine, has significantly increased in federal voting polls since the Russian

¹These increases in gas and electricity prices include changes in taxes and levies.

invasion. The AfD has also gained seats in the state-level elections of October 2023 in Bavaria and Hesse. In Eastern German states, it is frequently found to be the largest party in more recent polls.

It is an intuitive hypothesis that rising energy prices will lead to an increase in populist support. Previous research has identified that populist beliefs and strengthening of populist and extremist parties are linked to specific policy events. One important strand is concerned with the consequences of globalization, sometimes also referred to as the "China shock", which provides "compelling evidence that globalization shocks [...] have played an important role in driving up support for populist movements, particularly of the right-wing kind " (Rodrik, 2021). For Western Europe, Colantone and Stanig (2018) show that a strong import shock has not only led to an increase of political support for nationalist and isolationist parties, particularly on the radical right, but also to a general shift of the electorate to the right. Comparable results have been found for the US (Autor et al., 2020).

Potential losers from globalization (Particularly low-skilled workers in Germany, see Dauth et al., 2021) potentially overlap with regions that will be negatively affected by climate and energy policy (Vona et al., 2018). Bez et al. (2023) highlight that green attitudes and the likelihood to vote for green parties decreases significantly in regions that have been exposed to trade. Yet, only a small body of literature has explicitly studied political backlash of energy policy. In Italy, the introduction of a ban on polluting cars in Milan has strengthened the right wing extremist (Colantone et al., 2024). Egli et al. (2022) find that coal mine closures in the US led to higher voting shares for the Republican party in 2016.

In this paper, we study the causal effect of household energy price increases in Germany on political attitudes, using a difference-in-differences design. We hypothesize that increasing energy prices have caused increasing approval with populist political positions. We build our identification strategy around the idiosyncrasies of the billing system in the German energy sector. Most German households get only one bill for heating and one for electricity once a year, while paying monthly advance payments ("*Abschlagszahlung*") on

the expected energy costs over the year. If the annual sum of the instalment payments is less than the actual costs of heating or electricity (and thus the expected yearly bill), households have to pay a corrective bill (*Nachzahlung*). By law, households receive their energy bills with a one year delay. This means that in 2023, households will have received energy bills reflecting 2022 costs. To avoid a large difference between instalment payments and to avoid the risk for large corrective bills, utilities can unilaterally modify the advance payments. Such changes can happen at any time, and do not depend on household characteristics. Households are free to choose utility at will and it is common for households in the same street or even in the same building, to have subscriptions to different utilities, thus creating a large and quasi-random variation between peoples monthly bills. The billing system and the absence of live feedback data on consumption given a very low digitization rate in the German energy sector ² makes it difficult to anticipate retail price shocks. In fact, it introduces a disconnect between the current wholesale market and perceived retail prices. We argue that whether and when a household experiences the energy price increases induced by the war is largely exogenous, depending on whether their specific utility has adapted the advance payment. We exploit this quasi-experimental setting by constructing a panel starting in January 2023 and repeated approximately every 3 months until February 2024 ³, a period when German households eventually experienced large increases in their energy bills.

The use of survey data to answer political economy questions has become increasingly popular ([Stantcheva, 2023](#)). It leverages variations between- and within-individual answers to study the link connecting public policy and political attitudes ([Stantcheva, 2021](#)). Collecting a range of socio-demographic characteristics at the individual level allows us to account for potential confounders, which are typically unobservable in more aggregate data. While the exogenous variations used to identify causal effects often come from information treatments, (see [Haaland et al., 2023](#), for a review) as well as [Dechezleprêtre et al. \(2022\)](#) and [Douenne and Fabre \(2022\)](#) on environmental topics, another

²Only about 1% of German households are equipped with a smart meter for electricity (Energy transition readiness index, 2023).

³In this working paper we only include 3 waves, i.e. until October/November 2023.

source of variation comes from quasi-experimental settings. A growing body of literature assesses the political consequences of real economic shocks using panel data (Margalit, 2019; Martén, 2019; Naumann et al., 2016). Algan et al. (2017) use an instrumental variable approach to connect unemployment and a decreasing trust for democratic institutions. Rudolph and Gomm (2023) find no effect of economic hardship on support for environmental policies. We contribute to this strand of research by using panel data in an explicit difference-in-differences design. Because of the characteristics of our treatment, we use novel estimation strategies that take into account staggered treatment arrival, and dynamic and heterogeneous effects (de Chaisemartin et al., 2022; Roth et al., 2023). This is distinct from past contributions, which largely rely on Two-Way Fixed-Effects (TWFE) estimators. Indeed, recent research in econometrics has shown that TWFE estimators cannot be used to identify causal effects in quasi-experimental settings, unless one is willing to make very strong assumptions (de Chaisemartin et al., 2022).

We show that receiving an increase in electricity instalment-payments leads to a loss of support for liberal institutions. The treatment effect is dynamic and becomes larger over time, meaning that economic shocks can have long-lasting consequences on political attitudes. We contribute to the recent developments on public support for policies by showing the causal effect of individual economic circumstances on the perception of public policies. We further contribute to the understanding of the rise of populist political parties in Western Europe. We contribute to the methodology of survey-based research by combining the elicitation of political attitudes with quasi-random natural shocks, and identifying causal effects.

2 Data and hypothesis

We collected data from a representative panel of the German population across three survey waves spanning from January 2023 to November 2023.⁴ The survey was administered by the professional institute bilendi/respondi. The panel was re-filled to replace

⁴A fourth wave is currently collected and hence not included in this version of the working paper.

respondents who dropped out between waves. Respondents could complete the survey at home or via mobile devices, and they were able to flexibly interrupt and continue the survey.

We conducted the first wave between January 22, 2023 and February 9, 2023, following a successful pre-test. The survey was sent to 4551 individuals and we retrieved 2004 valid answers. The second wave spanned from 23 May 2023 to 18 July 2023.⁵ It contains 2100 answers, with over 72% of the respondents already present in the first wave. The third wave was conducted between October 10 and November 16. We collected 2096 valid answers, with 61% originating from participants already involved in the initial wave and 77% from those involved in the second wave. In total, we use a balanced panel containing 1223 individuals (N=3669).⁶

The survey is divided into 6 sections (see Appendix D):

1. Socio-demographic variables and data on dwelling
2. Data on electricity and heating
3. Elicitation of attitudes toward liberal democracy
4. Elicitation of attitudes toward redistribution
5. Elicitation of attitudes toward climate policies
6. Elicitation of xenophobic attitudes

We collect a wide range of socioeconomic and demographic data, including gender, age, education, income, and place of domicile. We also include information on respondents' dwelling, such as surface area, heating source and rental status. Compared to the general population, our sample is slightly younger and less affluent (Table 1).

Respondents are then asked to look at their latest electricity and heating bills, and report their installment payments, *Abschlagzahlung*, and possible corrective payments, *Nachzahlung*. If they are not able to find it, we ask for estimates. We also include

⁵75% of the answers were collected before June 15

⁶See Table 4 for the attrition analysis.

Table 1: Representativeness of the sample

	Population	Sample
East Germany	0.149	0.159
Household size=1	0.406	0.326
Household size=2	0.339	0.507
Household size=3	0.121	0.109
Household size \geq 4	0.134	0.057
Under 25 years old	0.045	0.083
Between 25 and 64 years old	0.667	0.766
Older than 64 years	0.289	0.151
Income below 1250 € (Household)	0.133	0.235
Income between 1250 € and 4000 €	0.575	0.502
Income at least 4000 €	0.292	0.262
College degree	0.240	0.297

Note: The data on the population is drawn from the German Federal Statistical Office (Destatis, 2023). Destatis (2023) addresses the main income earner, which explains some of the differences with our sample.

questions on the implementation of energy-saving behaviours by the household (e.g., reducing the temperature in the dwelling, investing in efficient appliances or improved insulation) to approximate efforts to reduce energy consumption.

The data on electricity and heating bills are self-reported, which entails a risk of measurement error. We address this risk in both the survey design and the definition of variables. We ask the respondents to report other data from the bill (date, consumption, etc.), which we use to evaluate the quality of their answer. Respondents reporting a change in instalment payments must indicate the amount they were paying before the change, which we can check using data from previous waves. When constructing the "instalment payment" variables, we exclude all monthly figures greater than 1000 €. After cleaning the data, we are left with 3134 observations of electricity instalment-payments and 2739 observations of heating instalment-payments.

We use the data on payment for electricity to define two treatment variables: one binary and one continuous. The binary treatment is equal to 1 if the individual has been shocked with an increase in instalment payments. The continuous one is the variation in installment payments with respect to the first wave.

Following the energy block, we elicit four main political attitudes: attitudes toward liberal democracy ⁷, attitudes toward redistribution⁸, attitudes toward climate policies, and xenophobic attitudes⁹. We measure the extent to which the respondents agree with specific statements using a 5-point Likert scale. Next, we combine the answers and compute the z-score (see Table 2). The result is an index representing the distance between the attitudes of an individual and the average of the population (Stantcheva, 2023). The indices are the outcome variables in our estimation. We use the data on political attitudes and energy costs to test the following hypothesis. A positive shock in energy price:

1. decreases support for price-based climate policies (Drews and van den Bergh, 2016; Douenne and Fabre, 2022).
2. increases support for redistributive policies, if respondents believe that energy expenditures are very unequally distributed (Martén, 2019; Sommer et al., 2022)
3. decreases support for liberal democracy (Algan et al., 2017; Guriev and Papaioannou, 2022)
4. increases agreement with xenophobic statements (see recent polls)

We capture a significant variation over time for many variables, for instance when it comes to efforts to reduce energy consumption (e.g. by investing in efficient appliances). Here we find a spike in investments in wave 1 when the energy crisis was heavily publicised. In wave 2, we see less such investments which may partly be because they were already done in the first wave and no more additional investments necessary. It may also be a seasonal effect as wave 2 was in the spring rather than winter. We also observe that costs expectations are time-varying. Almost 60% of the sample expected an increase in energy bills in the first wave, while only 36-40% expected an increase in the third

⁷We reproduce questions from the European Value Survey

⁸The questions are adapted from Stantcheva (2021).

⁹We combine questions from Mocan and Raschke (2016)'s study on Germany and Hjerm (2005) on Sweden

wave. This dynamics is likely due to individual receiving their bills and correcting their expectations.

Table 2: Composition of the attitudinal indices

	Against liberal democracy	Pro redistribution
Question	There are a variety of opinions about political systems. To what extent do you agree with the following statements?	Would you be for or against an income tax increase for higher earners in the following cases?
Answers with positive contribution	"It is best to have strong political leadership that doesn't have to take into account a parliament or elections and can make decisions quickly.", "The Army should have a greater say in the decisions of the federal government.", "The federal government should have the power to make policy decisions on a larger scale without consulting the state governments.", "Political decisions should increasingly be made by expert committees – rather than by elected representatives."	"The additional tax revenues will be used to expand welfare state aid for low-income earners", "The additional tax revenues will be used to invest more in German industry", "The additional tax revenues will be used to finance higher military spending", "The additional tax revenues will be used to subsidize energy consumption", "The additional tax revenues will be used to finance the decarbonisation of the economy", "The additional tax revenue will be used to reduce other taxes"
Answers with negative contribution	"Democracy has its flaws, but it is better than any other system of government.", "The Federal Constitutional Court should continue to be able to review the laws enacted by the Bundestag and, if necessary, stop them if they are incompatible with the Basic Law"	
Cronbach's alpha	0.61	0.67
	Pro climate policies	Xenophobia
Question	To what extent are you for or against the following climate protection measures?	There are different opinions on the role of immigrants and minorities in Germany. Keep in mind that there are no right or wrong answers because people have had different experiences. To what extent do you agree with the following statements?
Answers with positive contribution	"A single CO2 tax, i.e. covering all sectors, to increase the price of all fossil fuels", "Subsidizing the expansion of renewable energy, such as wind and solar", "Subsidising investments in improving the thermal insulation of homes in order to reduce the energy required for heating or cooling", "Financial support for emerging and developing countries to combat climate change"	"Criminals with foreign citizenship should be systematically deported.", "The German government should give preferential treatment to German citizens when using public support services.", "Immigrants should adapt to German traditions or to the German way of life.", "It seems that minorities do not want equal rights - but special rights."
Answers with negative contribution		"Germany should be a multicultural nation.", "Immigrants should have the same access to welfare state assistance as all other German citizens.", "Germany should take in those fleeing war or political oppression.", "German citizenship should be granted to all those born in Germany without preconditions. (place of birth principle).", "Germany can take in many immigrants without endangering its internal cohesion."
Cronbach's alpha	0.77	0.85

Note: The questions are translated from German. The original questions are in Appendix.

Table 3: Balanced Panel - Descriptive statistics by waves

	Wave 1 ¹	Wave 2 ¹	1 vs. 2 p.value ²	Wave 3 ¹	2 vs. 3 p.value ²
Socio-demographics					
Age	50.304 (14.318)	50.671 (14.336)	0.526	51.022 (14.296)	0.545
Female	0.500 (0.500)	0.501 (0.500)	0.968	0.502 (0.500)	0.968
Net monthly income	7.412 (2.567)	6.864 (3.512)	<0.001	6.943 (3.447)	0.588
Dwelling owner	0.436 (0.496)	0.438 (0.496)	0.903	0.439 (0.496)	0.968
Live in eastern Germany	0.165 (0.371)	0.166 (0.372)	0.957	0.166 (0.372)	>0.999
Electricity and heating					
Gas primary heating source	0.573 (0.495)	0.568 (0.496)	0.867	0.579 (0.494)	0.701
Electricity instalment payments	108.390 (98.451)	112.729 (105.582)	0.296	115.656 (106.793)	0.499
Heating instalment payments	121.104 (128.834)	117.277 (132.308)	0.538	122.529 (130.785)	0.408
Electricity from renewables	0.213 (0.409)	0.169 (0.375)	0.006	0.166 (0.372)	0.829
Expectations					
Expect increase in electricity bill	0.598 (0.491)	0.385 (0.487)	<0.001	0.359 (0.480)	0.181
Expect increase in heating bill	0.588 (0.492)	0.419 (0.494)	<0.001	0.398 (0.490)	0.304
Energy behaviour					
Invest in efficient appliances	0.170 (0.376)	0.129 (0.336)	0.005	0.162 (0.369)	0.022
Invest in efficient heating	0.084 (0.278)	0.066 (0.249)	0.092	0.078 (0.269)	0.242
Reduced car use	0.265 (0.441)	0.217 (0.412)	0.005	0.244 (0.429)	0.113
Reduce temperature	0.536 (0.499)	0.451 (0.498)	<0.001	0.464 (0.499)	0.516
Invest in improved insulation	0.087 (0.281)	0.065 (0.246)	0.039	0.070 (0.254)	0.628
Electricity savings	0.462 (0.499)	0.379 (0.485)	<0.001	0.425 (0.495)	0.019
Other					
Trust Government	0.313 (0.464)	0.269 (0.444)	0.016	0.252 (0.434)	0.333
Climate change primarily human-induced	0.552 (0.498)	0.542 (0.498)	0.626	0.529 (0.499)	0.517
AfD voter	0.114 (0.319)	0.137 (0.344)	0.088	0.179 (0.384)	0.005
Survey is politically neutral	0.800 (0.400)	0.788 (0.409)	0.484	0.800 (0.400)	0.453
Sample size	1223	1223		1223	

¹ Mean (SD)

² Welch Two Sample t-test

3 Identification

The identification of the causal effects of changes in electricity costs on political attitudes requires a difference-in-differences design, where we compare outcomes of groups who experienced a change in costs – the *treatment* group – with the groups who did not – the *control* group. Our particular research design differs from a classical difference-in-differences in two ways. First, individuals can be treated at any time, i.e. we observe *staggered arrival*. Second, the treatment is continuous and varies in intensity across individuals. In the rest of the paper, we focus on estimating the effect of the binary treatment on a single outcome variable: the support for liberal democracy. We show results for the continuous treatment in Appendix A.

We are interested in identifying the average effect on the treated:

$$ATT_t = \mathbb{E}(Y_{i,t}(1) - Y_{i,t}(0)|B_i = 1), \quad (1)$$

where Y is the support for liberal democracy, and $B = 1$ if the individual has experienced an increase in electricity costs. Following the conventional notation, $Y_{i,t}(1)$ is the outcome of individual i at t after being treated at $g < t$. $Y_{i,t}(0)$ is the potential *counterfactual* outcome at t if i is untreated.

The estimation problem relates to a growing body of literature on difference-in-differences with continuous treatment (Callaway et al., 2021; de Chaisemartin and D’Haultfœuille, 2020, 2021; de Chaisemartin et al., 2022; Roth et al., 2023), and varying treatment timing (Cengiz et al., 2019; Callaway and Sant’Anna, 2021; Goodman-Bacon, 2021; Wooldridge, 2021; Baker et al., 2021; de Chaisemartin and D’Haultfœuille, 2020, 2021; de Chaisemartin et al., 2022). As shown by Callaway et al. (2021); Wooldridge (2021); de Chaisemartin and D’Haultfœuille (2020); Roth et al. (2023), the identification of a treatment effect in such a setting requires 3 assumptions: random sampling, common trends, and no anticipation of the staggered treatment. We now discuss if such assumptions are likely to hold in our research design.

3.1 Sampling

The sample was recruited online and is broadly representative of the German population. However, a larger share of middle-sized households, relatively poorer households, and a lower share of individuals over 64 years old indicate a possible selection bias. This is a common problem in surveys administered online. Applying weights to the observations is unlikely to solve the issue: individuals over 64 years old who partake in an online survey are unlikely to be representative of all older individuals over 64 years old. Another bias could emerge from a differential attrition rate between the waves. Table 4 shows that the attrition is largely orthogonal to our socio-demographic variables, the energy variables, and the outcome variables which indicates that there is little selection bias into the balanced panel.

3.2 Parallel trends and strong exogeneity

Parallel trends and strong exogeneity are similar assumptions. For staggered treatment, the parallel trend assumption can be written as:

$$\mathbb{E}(Y_{i,g,t}(0) - Y_{i,gt-1}(0)|G_i = g, B_i = 1) - \mathbb{E}(Y_{i,g,t}(0) - Y_{i,t-1}(0)|G_i = g) = 0, \quad (2)$$

where G_i denotes the first wave in which individual i experienced an increase in prices. With this parallel trends assumption we impose that the average change in attitude of the untreated individual is the same as the change in attitude of the potential counterfactual individuals in every treatment timing group.

The assumption of strong exogeneity is necessary for the identification using the estimator of [de Chaisemartin and D’Haultfoeuille \(2020\)](#). It means that there is no unobserved dynamic confounder and that past attitudes on democracy do not influence the treatment. These assumptions are particularly challenging for two reasons: (i) energy prices are generally endogeneous and depend on demand-side behaviours ([Kilian, 2008](#)) and (ii) even if the price shocks are pure supply-shocks, households expecting a large increase in prices can adapt their behaviours and reduce their energy consumption preemptively.

Table 4: Attrition Analysis

	Respondent lost in wave 2 or 3
Socio-demographics	
Female	-0.031 (0.046)
Net monthly income of household	-0.010 (0.010)
Unemployed	0.055 (0.079)
University education	-0.061 (0.050)
Live in eastern Germany	-0.106 (0.068)
Electricity and heating	
Gas primary heating source	-0.246** (0.087)
Electricity instalment payments	0.000 (0.000)
Heating instalment payments	0.000 (0.000)
Electricity from renewables	0.009 (0.053)
Expectations	
Expect increase in electricity bill	0.004 (0.062)
Expect increase in heating bill	0.041 (0.063)
Energy behaviour	
Invest in efficient appliances	0.080 (0.065)
Invest in efficient heating	0.124 (0.078)
Reduced car use	-0.153** (0.054)
Reduce temperature	0.072 (0.056)
Invest in improved insulation	-0.101 (0.084)
Electricity savings	-0.100 (0.055)
Other	
Trust Government	0.107* (0.053)
Climate change primarily human-induced	0.084 (0.052)
AfD voter	-0.077 (0.079)
Survey is politically neutral	0.029 (0.057)
Indices	
Index "Against liberal democracy"	0.003 (0.007)
Index "Pro redistribution"	0.002 (0.007)
Index "Pro climate policies"	-0.014 (0.008)
Index "Xenophobia"	-0.004 (0.005)
Constant	0.644*** (0.130)
R-squared	0.081
Regression coefficient (Robust standard error).	
* : $p < 0.05$, ** : $p < 0.01$, *** : $p < 0.001$.	

A positive coefficient means that an individual with such characteristic is more likely to drop out of the panel, at some point in time.

In the latter case, the resulting variation in electricity costs might be correlated with household characteristics. It would mean that there is a selection bias in the treatment group.

A common strategy to address the price endogeneity issue is to rely on unforeseeable supply-side shocks (Kilian, 2009). The unexpected war in Ukraine coupled with the German dependency on Russian gas provides a convincing exogenous shock in energy prices. Gas prices for German households have almost doubled between 2021 and 2023, while electricity prices have increased by 25% over the same period. This shock is global in nature and should in principle affect all households. The lack of natural control group can be mitigated by using a synthetic control group as in Leroutier (2022) or by exploiting the differential timing of the treatment between different groups as in Li et al. (2014).

This is the challenge for us. The war, the price hike and the increased support for populist parties are all fairly simultaneous. Our identification strategy is to exploit the exogenous variations in energy retail prices across individuals due to the idiosyncrasies of the German energy sector. First, the sector is largely liberalized and diversified. Despite a growing share of renewable power, the energy mix in Germany is still largely dependent on fossil fuels. In 2022, 78% of German energy came from gas, oil and coal, and only 7% from hydro, wind and solar. The picture is different for electricity generation: 49% comes from fossil fuels and 36% from renewable sources IEA (2023). The Herfindahl-Hirschmann Index of the electricity generation market is around 2000, denoting an intermediary level of concentration. The largest company on this market has a 26% market share – compared to 17% in Italy and 79% in France. Around 1400 companies operate as electricity suppliers in Germany, the majority of them operate exclusively on small local markets. Regions in the North of Germany tend to be less dependent on fossil fuel for electricity generation, while regions in the West are more dependent of gas and coal.¹⁰ It should be noted that the largest retail companies, RWE and E.ON, cover all the territory through several regional subsidiaries, but that grid fees are defined at the regional level

¹⁰For instance, 90% of the electricity generating capacity of Schleswig-Holstein and Mecklenburg-Schwerin comes from renewable sources, but only 35% in North Rhine-Westphalia. There is however no regional price discrimination in place in Germany

and have followed heterogeneous trajectories over the last few years. The diversity of electricity generation sources, along with a liberalized market, allows retail suppliers to adopt diverse pricing, investment and long-term contract strategies.

Consumers can choose between the default regional supplier and alternative companies. Contracts to non-default suppliers represent 39% of all contracts. Consumers switch contracts and suppliers infrequently: 3.3 % have changed contracts and 9.7% have changed suppliers in 2022.¹¹

Finally, German households generally pay for their electricity through monthly instalments. The timing with which people receive notification that their payments are changing is largely exogenous. In other words, there is no specific period when consumers are supposed to receive a notification that their instalment-payments have increase. These characteristics of the German electricity market combined with the absence of a federal price regulation in Germany creates exogeneous variation in electricity retail prices and, more importantly, heterogeneous exposure to shocks in the energy market. A recent analysis by the "Federal Network Agency" indicates that average price increases between 2021 and 2022 can vary by a factor two depending on the supplier.

A potential source of endogeneity is the choice of renewable electricity providers. People selecting these providers could exhibit stronger pro-environmental and left-leaning political attitudes, and could receive lower price increases. Contrary to our intuition, Table 6 shows no significant link between increases in instalment payments and renewable electricity contracts.¹² Households with similar socio-demographic characteristics can thus experience a heterogeneous variation in electricity prices because of largely exogeneous factors.

We have argued that *electricity prices* are exogeneous from the household's perspective when controlling for renewable electricity contracts. However, variations in *electricity demand*, and the resulting variation in electricity costs, might be correlated with household characteristics. Even if realised changes in prices are largely random, households ex-

¹¹These figures include people who have moved home.

¹²We still include "renewable electricity provider" as a covariate because of the theoretical source endogeneity it represents.

pecting a large increase in prices can adapt their behaviours and reduce their energy consumption preemptively. In this case, people informed about the electricity markets who can engage in energy-saving behaviours are likely to experience a lower increase in electricity costs. Indeed, Table 6 shows that variations in electricity costs are negatively correlated with the lag of price expectations. In other words, people who expected a larger price increase in January 2023 experienced a lower increase in electricity bills later that year.

To address this issue, we include as control variables (i) the lag of expected energy prices, (i.e., we control for price expectations at $t - 1$ when computing the effect of electricity costs at t), and (ii) information on whether or not the respondents have implemented energy-saving behaviours. The treatment effect we estimate is conditional on price expectations and effort to reduce electricity consumption.

We test our parallel trends assumption for the binary treatment. We set $Treatment = 1$ if the individual has experienced an increase in instalment payments. Individuals with $Treatment = 0$ in all three waves form the control group. we compare the variation in outcome variable pre-treatment and post-treatment. The first test compares the variation in outcome between $t = 1$ and $t = 2$ of the control group and the group treated at $t = 3$. The second test compares the variation between in outcome between $t = 2$ and $t = 3$ of the control group and the group treated at $t = 2$. The latter test is also used to find dynamic treatment effects. The results are displayed in Table 5. They show no significant differences in pre-treatment trends and a small difference in post-treatment trends, which indicates the presence of dynamic treatment effects.

Table 5: Pre-test of parallel trends

	(1)	(2)
	Pre: $Y_2 - Y_1$	Post: $Y_3 - Y_2$
Treatment group	-0.293 (0.375)	-0.461* (0.248)
Constant	-0.441*** (0.113)	0.378* (0.223)
R-squared	0.001	0.006
Observations	530	603

Robust standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: Link between treatment intensity and control variables

	Variation in instalment payments (%)
Expects an increase in electricity bills (lag)	-0.0672*** (0.0175)
Socio-demographics	
Female	0.0075 (0.0176)
East Germany	-0.0091 (0.0251)
Region	0.0028 (0.0021)
Age	0.0010 (0.0006)
Net monthly income of household	0.0006 (0.0028)
Electricity and heating	
Electricity from renewable sources	.00179 (0.0234)
Surface area of the dwelling	-0.0002 (0.0002)
Energy behaviour	
Reported change in energy consumption	-0.0122 (0.0081)
Reduce temperature	-0.0047 (0.0118)
Electricity savings	0.0159 (0.0135)
Invest in efficient appliances	-0.0159 (0.0099)
Invest in improved insulation	-0.0287** (0.0145)
Invest in efficient heating	0.0233* (0.0141)
Reduced car use	-0.0206** (0.0087)
Constant	0.1409** (0.0660)
R-squared	0.02
Observations	2154

Robust standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

3.3 No anticipation of the staggered treatment

The no anticipation assumption can be written:

$$Y_{i,t,g}(1) - Y_{i,t}(0) = 0 \quad \forall t < g \quad (3)$$

This assumption is fulfilled if the attitudes measured prior to the treatment are not influenced by expected increases in electricity costs. It is violated if individuals are able to anticipate whether they will be affected by an increase in electricity costs, and adjust their political attitudes accordingly. For instance, some people might foresee a large increase in costs because they know that their local authorities will not implement relief measures, and reduce their trust in local democracy. Similarly to 3.2, the "no anticipation" assumption is likely to hold when estimating the treatment effect conditional on price expectations. We test if the outcome at time t is different between the control group and the group treated at $t + 1$. Table 7 shows no effect of the treatment on the prior outcomes.

Table 7: Pre-test of no anticipation

	(1)	(2)
	Y at $t = 1$	Y at $t = 2$
Treated at $t + 1$	0.635 (0.516)	-0.030 (0.353)
Constant	-0.076 (0.155)	0.503 (0.317)
R- squared	0.003	0.000
Observations	542	615

Robust standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

3.4 Estimation strategy

In our setting, the treatment effects are likely to vary across groups and waves. We have also shown in section 3.2 that the treatment effects might be dynamic. The recent research in econometrics has shown that such heterogeneity biases the simple Two-Way

Fixed-Effects estimator (de Chaisemartin and D’Haultfoeulle, 2021). Instead, we use the estimation strategy suggested by de Chaisemartin and D’Haultfoeulle (2020) and extended by de Chaisemartin et al. (2022), which allows for a robust estimation in the presence of dynamic and heterogeneous effects.¹³ As mentioned in 3.2 and 3.3, we account for potential confounders by including past price expectations, intentions to reduce energy consumption, renewable electricity providers, as well as dwelling surface area.

4 Do electricity costs change political attitudes?

Our results show that an increase in electricity instalment-payments has a negative effect on the support for liberal institutions and democracy (Table 8). Interestingly, the effect is dynamic and increases over time 2. Just after experiencing an increase in cost, the anti-liberal index goes up by 0.21 (p-value = 0.20). A few months after the treatment, the index increases by 0.48 (p-value: 0.02). The average effect is an increase of 0.34 (p-value = 0.04) over the two periods following the shock.¹⁴ We also calculate the "placebo" estimate, which compares the evolution in attitudes of treated and untreated individuals before the treatment occurs. The estimate is not significantly different from zero (p-value = 0.47). This indicates that the identification assumptions (parallel trends, exogeneity and no anticipation) and pre-tests from section 3 are likely to hold.

	Estimate	Standard Error	Lower Bound CI	Upper Bound CI	p-value	N
Effect $t = 0$	0.214	0.168	-0.115	0.544	0.202	2076
Effect $t = 1$	0.481	0.203	0.084	0.878	0.018	1058
Average effect	0.340	0.165	0.016	0.664	0.039	3134
Placebo	0.227	0.315	-0.391	0.846	0.471	938

Table 8: Estimation of the binary treatment ATT, using *did_multiplegt* with the *robust_dynamic* option and 800 bootstrap repetitions. The treatment occurs at $t = 0$.

¹³Stata package: *did_multiplegt*.

¹⁴The unit of the treatment effect is the standard deviation of the anti-liberal attitudes in the population at t . For instance, the effect at $t = 1$ should be interpreted as: people treated at $t = 0$ display anti-liberal attitudes 0.48 standard deviation higher at $t = 1$, compared to the untreated group.

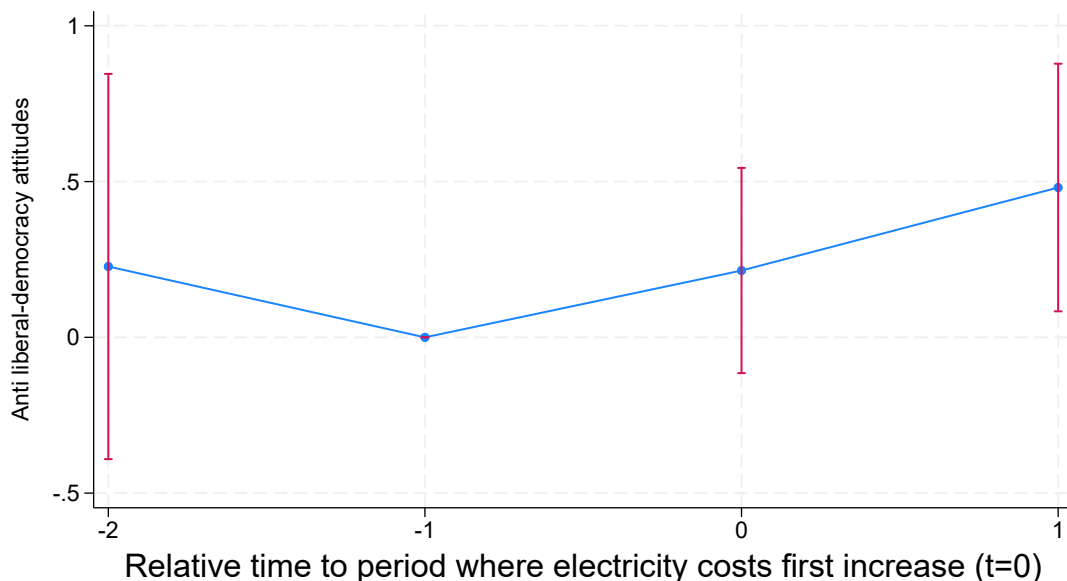


Figure 1: Estimation of the binary treatment ATT, using *did_multipligt* with the *robust_dynamic* option and 800 bootstrap repetitions. The treatment occurs at $t = 0$.

We follow a similar procedure with single questions as outcome variables. We find that the effects are mostly driven by one statement: "Political decisions should increasingly be made by expert committees – rather than by elected representatives.". Similarly, we find a negative effect of increases in electricity costs on the trust in the legal system.

5 Discussion and Conclusion

In this study, we find that increased electricity cost decreases support for liberal institutions. It would thus seem that simple price shocks in energy could have a destabilizing effect on democracies.

Understanding the channels through which increased (energy) costs change political attitudes deserves further research. One main hypothesis is that citizens perceive the increase in energy costs as unfair, and the response of government as insufficient. Another hypothesis is that populist parties have identified it as a successful strategy to identify

and exploit this kind of economic frustration. A similar argument has been used to explain the rise of the yellow vests in France ([Douenne and Fabre, 2022](#)) or the rise of populist parties in regions negatively affected by free trade ([Guriev and Papaioannou, 2022](#)).

Importantly, we identify that the impact on attitudes accumulates over time. That is, price shocks can start destabilizing trust in liberal institutions in a way that grows over time. This implies that political reactions to induced price changes, e.g. through carbon pricing, need to be immediate and well communicated from the start.

Communication around economic shocks hence seems to be a crucial ingredient to manage the political economy outcomes. Explaining the reasons behind economic changes and the expected consequences could help build public understanding and trust. This is particularly important for climate policies leading to high costs for households ([Sommer et al., 2022](#)). In this regard, it is interesting to note that 58% of households did not realize that the German government actually put forward measures to cushion households from energy price increases. Making sure the necessity for such policies is presented in a transparent debate could change the way the increase in energy costs are perceived ([Dechezleprêtre et al., 2022](#)). Households who receive the information signal could adapt their energy-behavior and reduce their exposure to increased prices. Conversely, climate policy reforms resulting in unexpected economic costs have the potential to undermine trust in democratic institutions.

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A Estimation of the ATT for the continuous treatment

	Estimate	Standard Error	Lower Bound CI	Upper Bound CI	p-value	N
Effect $t = 0$	0.155	0.099	-0.041	0.351	0.120	1760
Effect $t = 1$	0.226	0.117	-0.003	0.455	0.052	980
Average effect	0.428	0.211	0.013	0.842	0.043	2740
Placebo	0.106	0.223	-0.391	0.543	0.635	637

Table 9: Estimation of the continuous treatment ATT, using *did_multipligt* with the *robust_dynamic* option and 800 bootstrap repetitions. The treatment occurs at $t = 0$.

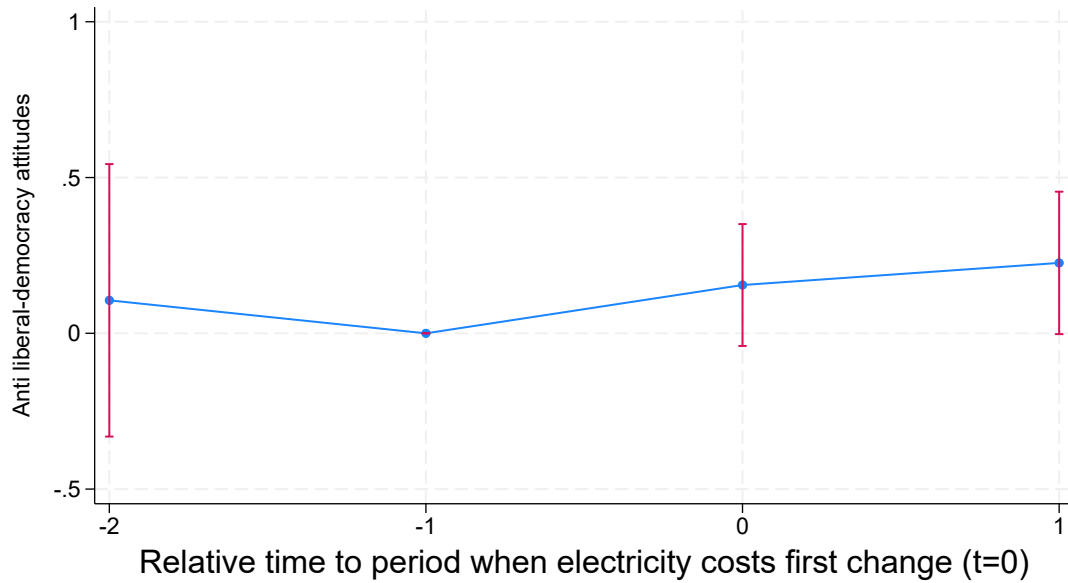


Figure 2: Estimation of the continuous treatment ATT, using *did_multipligt* with the *robust_dynamic* option and 800 bootstrap repetitions. The treatment occurs at $t = 0$.

B Estimation of the ATT on single attitudes towards democracy

In this section, we show the ATT on the individual statements, which are used to create the anti-liberal democracy index. The answers to these questions are re-coded such that they all contribute positively to the index (see Table 2. Concretely, positive coefficients for "*Democracy has its flaws, but it is better than any other system of government*" and "*The Federal Constitutional Court should continue to be able to review the laws enacted by the Bundestag and, if necessary, stop them if they are incompatible with the Basic Law*" should be interpreted as a diminishing support for these statements after an increase in electricity costs.

Democracy has its flaws, but it is better than any other system of government:

	Estimate	Standard Error	Lower Bound CI	Upper Bound CI	p-value	N
Effect $t = 0$	-0.042	0.058	-0.155	0.071	0.464	2037
Effect $t = 1$	-0.003	0.067	-0.133	0.126	0.962	1043
Average effect	-0.027	0.055	-0.135	0.081	0.627	3080
Placebo	0.079	0.109	-0.134	0.292	0.468	919

Table 10: Estimation of the binary treatment ATT, using *did_multiplegt* with the *robust_dynamic* option and 800 bootstrap repetitions. The treatment occurs at $t = 0$.

It is best to have strong political leadership that does not have to take into account a parliament or elections and can make decisions quickly:

	Estimate	Standard Error	Lower Bound CI	Upper Bound CI	p-value	N
Effect $t = 0$	0.069	0.081	-0.090	0.229	0.394	1956
Effect $t = 1$	0.137	0.105	-0.067	0.342	0.189	1005
Average effect	0.101	0.083	-0.060	0.264	0.218	2961
Placebo	0.082	0.127	-0.167	0.330	0.520	879

Table 11: Estimation of the binary treatment ATT, using *did_multiplegt* with the *robust_dynamic* option and 800 bootstrap repetitions. The treatment occurs at $t = 0$.

The Army should have a greater say in the decisions of the federal government:

	Estimate	Standard Error	Lower Bound CI	Upper Bound CI	p-value	N
Effect $t = 0$	0.116	0.074	-0.133	0.156	0.875	1959
Effect $t = 1$	0.082	0.095	-0.105	0.268	0.390	1001
Average effect	0.043	0.075	-0.104	0.190	0.567	2965
Placebo	0.083	0.149	-0.210	0.376	0.579	877

Table 12: Estimation of the binary treatment ATT, using *did_multiplegt* with the *robust_dynamic* option and 800 bootstrap repetitions. The treatment occurs at $t = 0$.

The federal government should have the power to make policy decisions on a larger scale without consulting the state government:

	Estimate	Standard Error	Lower Bound CI	Upper Bound CI	p-value	N
Effect $t = 0$	0.155	0.081	-0.004	0.314	0.056	1962
Effect $t = 1$	0.200	0.102	0.000	0.400	0.049	1000
Average effect	0.181	0.080	0.025	0.337	0.023	2962
Placebo	0.164	0.153	-0.136	0.465	0.283	887

Table 13: Estimation of the binary treatment ATT, using *did_multiplegt* with the *robust_dynamic* option and 800 bootstrap repetitions. The treatment occurs at $t = 0$.

Political decisions should increasingly be made by expert committees – rather than by elected representative:

	Estimate	Standard Error	Lower Bound CI	Upper Bound CI	p-value	N
Effect $t = 0$	0.177	0.080	0.019	0.334	0.028	1965
Effect $t = 1$	0.215	0.096	0.0027	0.404	0.025	996
Average effect	0.200	0.078	0.047	0.353	0.010	2961
Placebo	- 0.236	0.149	-0.528	0.0555	0.112	886

Table 14: Estimation of the binary treatment ATT, using *did_multiplegt* with the *robust_dynamic* option and 800 bootstrap repetitions. The treatment occurs at $t = 0$.

The Federal Constitutional Court should continue to be able to review the laws enacted by the Bundestag and, if necessary, stop them if they are

incompatible with the Basic Law:

	Estimate	Standard Error	Lower Bound CI	Upper Bound CI	p-value	N
Effect $t = 0$.2080164	.1750072	-.1349976	.5510305	0.639	2076
Effect $t = 1$.4906834	.2093102	.0804354	.9009313	0.837	1058
Average effect	.3405542	.1656988	.0157845	.6653238	0.689	3134
Placebo	.1902996	.3418505	-.4797274	.8603265	0.616	938

Table 15: Estimation of the binary treatment ATT, using *did_multiplgt* with the *robust_dynamic* option and 800 bootstrap repetitions. The treatment occurs at $t = 0$.

C ATT on other indices

C.1 Xenophobic attitudes

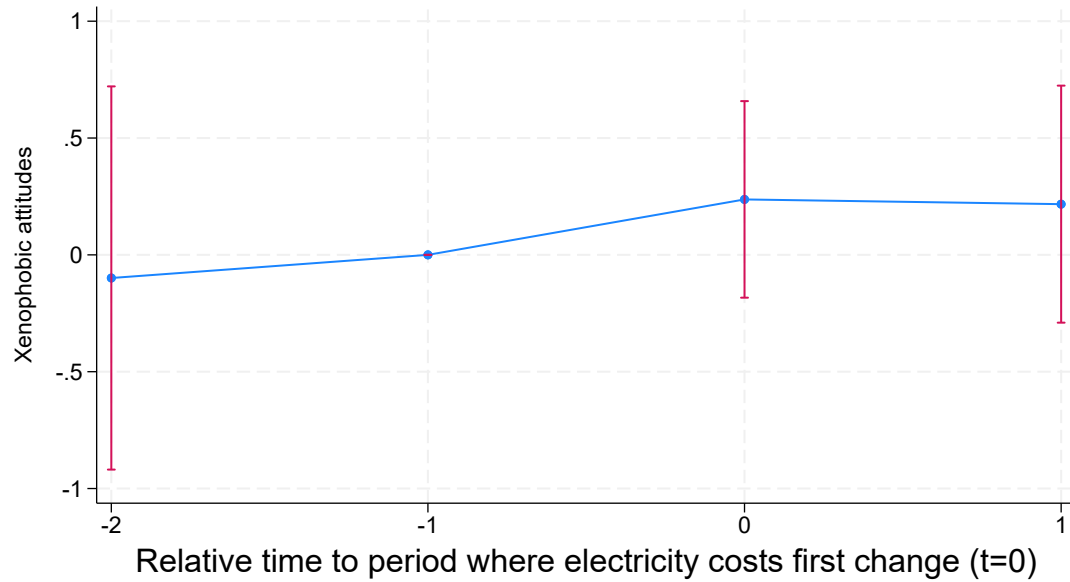


Figure 3: Estimation of the continuous treatment ATT, using *did_multiplet* with the *robust_dynamic* option and 800 bootstrap repetitions. The treatment occurs at $t = 0$.

C.2 Pro climate-policies

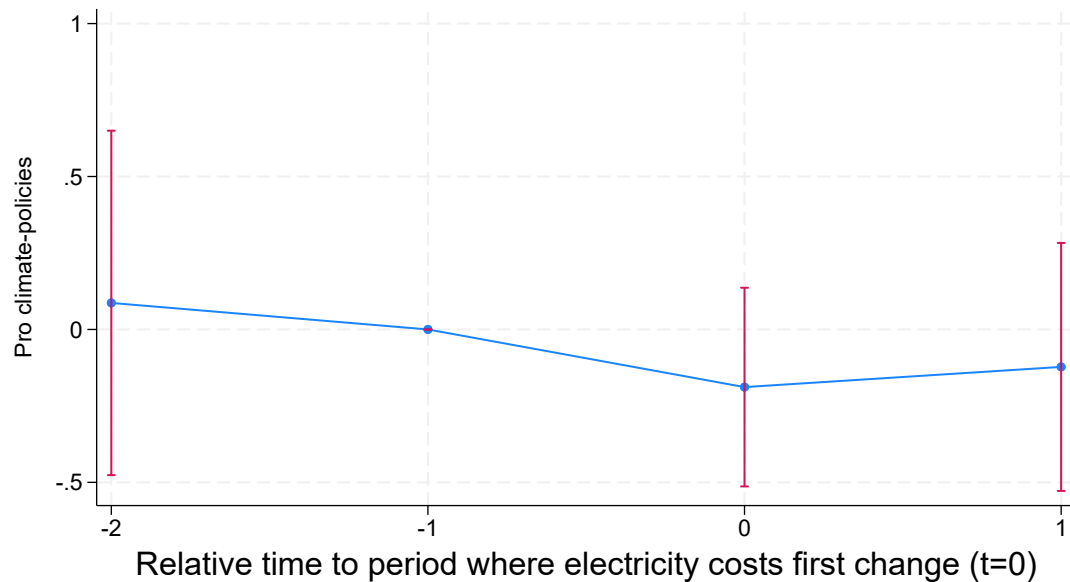


Figure 4: Estimation of the continuous treatment ATT, using *did_multiplegt* with the *robust_dynamic* option and 800 bootstrap repetitions. The treatment occurs at $t = 0$.

C.3 Pro redistribution

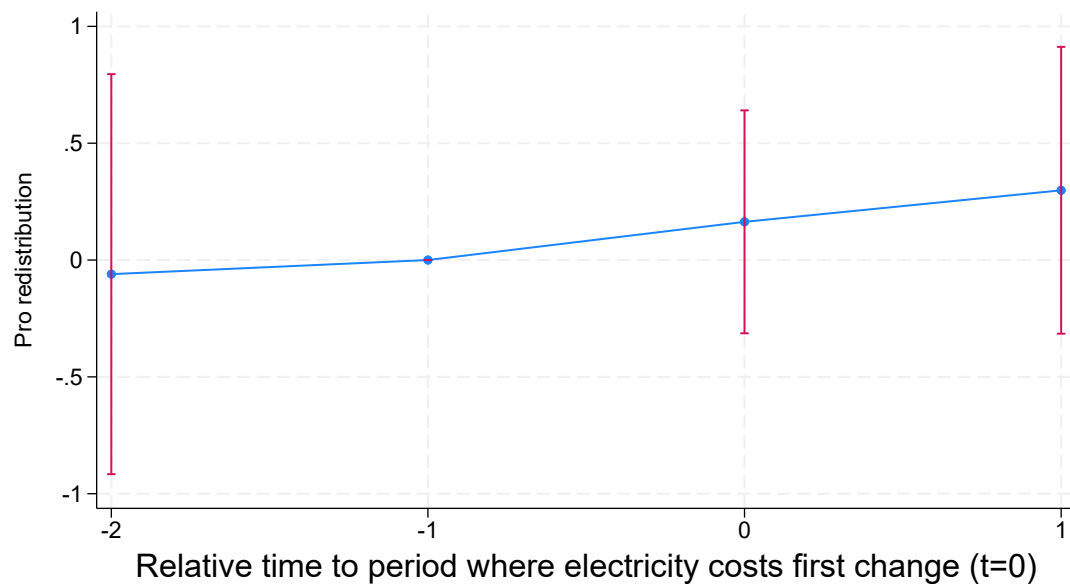


Figure 5: Estimation of the continuous treatment ATT, using *did_multiplegt* with the *robust_dynamic* option and 800 bootstrap repetitions. The treatment occurs at $t = 0$.

D Survey questions

In this section, we report the original survey questions used in the analysis.

D.1 Socio-demographics

- *Age*: Wie alt sind Sie?
- *Female*: Welchem Geschlecht ordnen Sie sich zu?
 - Männlich; Weiblich; Divers; Keine Angabe
 - *Female* = 1 if Weiblich
- *Net monthly income of household*: Wie hoch ist das monatliche Nettoeinkommen Ihres Haushaltes insgesamt? Gemeint ist damit die Summe, die sich ergibt aus Lohn, Gehalt, Einkommen aus selbständiger Tätigkeit, Rente oder Pension, jeweils nach Abzug der Steuern und Sozialversicherungsbeiträge. Rechnen Sie bitte auch die Einkünfte aus öffentlichen Beihilfen, Einkommen aus Vermietung, Verpachtung, Wohngeld, Kindergeld und sonstige Einkünfte hinzu.
 - Unter 700 Euro; 700 bis unter 1.200 Euro; 1.200 bis unter 1.500 Euro; 1.500 bis unter 1.900 Euro; 1.900 bis unter 2.300 Euro; 2.300 bis unter 2.700 Euro; 2.700 bis unter 3.100 Euro; 3.100 bis unter 3.500 Euro; 3.500 bis unter 3.900 Euro; 3.900 bis unter 4.300 Euro; 4.300 bis unter 4.700 Euro; 4.700 bis unter 5.100 Euro; 5.100 Euro und mehr; Keine Angabe
- *Dwelling owner*: Bewohnen Sie Ihre Hauptwohnung bzw. Haus als Eigentümer?
 - Ja; Nein; weiß nicht
 - *Dwelling owner* = 1 if Ja
- *Live in eastern Germany*: In welchem Bundesland leben Sie momentan?

-
- Baden-Württemberg; Bayern; Berlin; Brandenburg; Bremen; Hamburg; Hessen; Mecklenburg-Vorpommern; Niedersachsen; Nordrhein-Westfalen; Rheinland-Pfalz; Saarland; Sachsen; Sachsen-Anhalt; Schleswig-Holstein; Thüringen
 - *Live in eastern Germany* = 1 if Brandenburg or Mecklenburg-Vorpommern or Sachsen or Sachsen-Anhalt or Schleswig-Holstein or Thüringen.
 - *Unemployed*: Was trifft überwiegend auf Sie zu?
 - Ich bin erwerbs- bzw. berufstätig oder selbstständig (inkl. Auszubildende, Personen in Elternzeit oder Altersteilzeit); Ich bin Schüler/-in oder Student/-in; Ich bin Rentner/-in, Pensionär/-in; Ich bin Hausfrau/-mann oder versorge Kinder und/oder pflegebedürftige Personen; Ich erhalte Sozialhilfe, Arbeitslosengeld oder Grundsicherung im Alter oder bei Erwerbsminderung; Keine der genannten Auswahlmöglichkeiten trifft auf mich zu; Keine Angabe
 - *Unemployed* = 1 if Ich erhalte Sozialhilfe, Arbeitslosengeld oder Grundsicherung im Alter oder bei Erwerbsminderung
 - *University education*: Welchen höchsten Abschluss haben Sie?
 - Keinen Abschluss (ISCED 0); Abschluss nach höchstens 8 Jahren Schulbesuch (insbesondere Abschluss im Ausland) (ISCED 1-2); Volksschul-/Realschulabschluss (Mittlere Reife), Abschluss der Polytechnischen Oberschule oder gleichwertiger Abschluss; Abitur, Fachabitur (ISCED 3-4); Lehre, Berufsausbildung im dualen System, Berufsakademie, Fachakademie (ISCED 5); Bachelorabschluss oder equivalent (ISCED 6); Masterabschluss oder equivalent (ISCED 7); Promotion oder equivalent (ISCED 8); Keine Angabe
 - *University education* = 1 if Bachelorabschluss oder equivalent (ISCED 6) or Masterabschluss oder equivalent (ISCED 7) or Promotion oder equivalent (ISCED 8)

D.2 Electricity and heating

- *Gas primary heating source*: Welcher Energieträger ist die primäre Quelle Ihrer Wärme?
 - Kohle; Öl; Holz; Gas; andere; weiß nicht
 - *Gas primary heating source* = 1 if Gas
- *Electricity from renewable*: Zahlen Sie einen Aufschlag für Ökostrom?
 - Ja; Nein; weiß nicht
 - *Electricity from renewable* = 1 if Ja

D.3 Expectations

- *Expect increase in electricity bill*: Rechnen Sie mit einer Veränderung der Abschlagszahlung für Strom nach Ihrer nächsten Jahresabrechnung?
 - Ich rechne mit einer deutlich geringeren Abschlagszahlung; Ich rechne mit einer etwas geringeren Abschlagszahlung; Ich rechne damit, dass meine Abschlagszahlung unverändert bleibt; Ich rechne mit einer etwas höheren Abschlagszahlung; Ich rechne mit einer deutlich höheren Abschlagszahlung
 - *Expect increase in electricity bill* = 1 if Ich rechne mit einer etwas höheren Abschlagszahlung or Ich rechne mit einer deutlich höheren Abschlagszahlung
- *Expect increase in heating bill*: Rechnen Sie mit einer Veränderung der Abschlagszahlung für Wärme nach Ihrer nächsten Jahresabrechnung?
 - Ich rechne mit einer deutlich geringeren Abschlagszahlung; Ich rechne mit einer etwas geringeren Abschlagszahlung; Ich rechne damit, dass meine Abschlagszahlung unverändert bleibt; Ich rechne mit einer etwas höheren Abschlagszahlung; Ich rechne mit einer deutlich höheren Abschlagszahlung
 - *Expect increase in heating bill* = 1 if Ich rechne mit einer etwas höheren Abschlagszahlung or Ich rechne mit einer deutlich höheren Abschlagszahlung

D.4 Energy behaviour

We build these variables using this question: "Bitte geben Sie an, welche der folgenden Maßnahmen Sie ergriffen haben, um die Energiepreisänderungen zu bewältigen?", with answers "Trifft voll zu"; "Trifft mit Abstrichen zu"; "Trifft eher nicht zu"; "Trifft gar nicht zu".

- *Invest in efficient appliances*: Investitionen in effizientere elektrische Geräte
 - *Invest in efficient appliances* = 1 if "Trifft voll zu" or "Trifft mit Abstrichen zu"
- *Invest in efficient heating*: Investitionen in ein effizienteres Heizsystem
 - *Invest in efficient heating* = 1 if "Trifft voll zu" or "Trifft mit Abstrichen zu"
- *Reduced car use*: Geringere Nutzung meines Kraftfahrzeugs
 - *Reduced car use* = 1 if "Trifft voll zu" or "Trifft mit Abstrichen zu"
- *Reduce temperature*: Regulierung der Raumtemperatur
 - *Reduce temperature* = 1 if "Trifft voll zu" or "Trifft mit Abstrichen zu"
- *Invest in improved insulation*: Investitionen in Wärmedämmung
 - *Invest in improved insulation* = 1 if "Trifft voll zu" or "Trifft mit Abstrichen zu"
- *Electricity savings*: Stromsparmaßnahmen
 - *Electricity savings* = 1 if "Trifft voll zu" or "Trifft mit Abstrichen zu"

D.5 Other

- *Trust Government*: Inwieweit vertrauen Sie darauf, dass die folgenden Akteure das tun, was für die Gesellschaft am besten ist?

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- überhaupt kein Vertrauen; eher geringes Vertrauen; weder geringes noch großes Vertrauen; eher großes Vertrauen; großes Vertrauen; weiß nicht
 - *Trust Government* = 1 if eher großes Vertrauen or großes Vertrauen for "Bundesregierung"
 - *Climate change primarily human-induced*: Glauben Sie, dass der Klimawandel durch natürliche Prozesse, menschliches Handeln oder beide Faktoren verursacht wird?
 - nur durch natürliche Prozesse; hauptsächlich durch natürliche Prozesse; in gleichem Maße durch natürliche Prozesse und menschliches Handeln; hauptsächlich durch menschliches Handeln; nur durch menschliches Handeln; Ich glaube nicht, dass es den Klimawandel gibt; Ich weiß nicht.
 - *Climate change primarily human-induced* = 1 if hauptsächlich durch menschliches Handeln or nur durch menschliches Handeln.
 - *AfD voter*: Welche politische Partei würden Sie im Falle einer Wahl derzeit am ehesten unterstützen?
 - SPD; CDU/CSU; Bündnis 90/Die Grünen; FDP; AfD; Die Linke; Eine andere Partei; Keine Partei; Weiß nicht/keine Angabe
 - *AfD voter* = 1 if AfD
 - *Survey is politically neutral*: Bevor wir Ihnen die letzten Fragen stellen, würden wir gerne mehr über Ihre Wahrnehmung der Umfrage erfahren. Denken Sie, dass die Umfrage
 - politisch linkslastig ist; politisch rechtslastig ist; weder links- noch rechtslastig ist
 - *Survey is politically neutral* = 1 if weder links- noch rechtslastig ist

D.6 Indices

We provide the original questions displayed in Table 2.

- Liberal democracy: Es gibt eine Vielzahl an Meinungen zu politischen Systemen. Inwieweit stimmen Sie den folgenden Aussagen zu? (stimme überhaupt nicht zu; stimme eher nicht zu; unentschieden; stimme eher zu; stimme voll und ganz zu; weiß nicht)
 - Die Demokratie hat ihre Fehler, aber sie ist besser als jedes andere Regierungssystem.
 - Es ist am besten, eine starke politische Führung zu haben, die ein Parlament oder Wahlen nicht berücksichtigen muss und Entscheidungen schnell treffen kann.
 - Die Bundeswehr sollte ein größeres Mitspracherecht bei den Entscheidungen der Bundesregierung haben.
 - Die Bundesregierung sollte die Macht haben, politische Entscheidungen in größerem Umfang ohne Beratung mit den Landesregierungen zu treffen.
 - Politische Entscheidungen sollten verstärkt von Expertengremien getroffen werden – anstatt von gewählten Repräsentanten.
 - Das Bundesverfassungsgericht sollte weiterhin die vom Bundestag erlassenen Gesetze überprüfen und ggf. stoppen können, wenn sie mit dem Grundgesetz nicht vereinbar sind
- Redistribution: Wären Sie in den folgenden Fällen für oder gegen eine Einkommenssteuererhöhung für Besserverdienende? (stark dagegen; eher dagegen; weder dafür noch dagegen; eher dafür; stark dafür; weiß nicht)
 - die zusätzlichen Steuereinnahmen werden dafür verwendet, sozialstaatliche Hilfen für Geringverdienende auszuweiten
 - die zusätzlichen Steuereinnahmen werden dafür verwendet, mehr in die deutsche Industrie zu investieren

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- die zusätzlichen Steuereinnahmen werden dafür verwendet, höhere Militärausgaben zu finanzieren
 - die zusätzlichen Steuereinnahmen werden dafür verwendet, den Energiekonsum zu subventionieren
 - die zusätzlichen Steuereinnahmen werden dafür verwendet, die Dekarbonisierung der Volkswirtschaft zu finanzieren
 - die zusätzlichen Steuereinnahmen werden dafür verwendet, andere Steuern zu reduzieren
- Climate policies: Inwieweit Sind Sie für oder gegen die folgenden Klimaschutzmaßnahmen? (stark dagegen; eher dagegen; weder dafür noch dagegen; eher dafür; stark dafür; weiß nicht)
 - Einheitliche, also alle Sektoren umfassende, CO₂-Steuer, um die Preise für alle fossilen Brennstoffe zu erhöhen
 - Subventionierung des Ausbaus erneuerbarer Energie, wie z.B. Wind und Solar
 - Laufzeitverlängerung der Atomkraftwerke
 - Wiedereinstieg in die Atomenergie
 - Subventionierung von Investitionen in die verbesserte Wärmedämmung von Häusern, um den beim Heizen bzw. Kühlen entstehenden Energiebedarf zu reduzieren
 - Finanzielle Hilfe für Schwellen- und Entwicklungsländer zur Bekämpfung des Klimawandels
- Xenophobia: Es gibt unterschiedliche Meinungen zur Rolle von Immigranten und Minderheiten in Deutschland. Beachten Sie, dass es keine richtigen oder falschen Antworten gibt, da Menschen unterschiedliche Erfahrungen gemacht haben. Inwieweit stimmen Sie den folgenden Aussagen zu? (stimme überhaupt nicht zu; stimme eher nicht zu; unentschieden; stimme eher zu; stimme stark zu; weiß nicht)

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- Deutschland sollte eine multikulturelle Nation sein.
 - Immigranten sollten sich an deutsche Traditionen bzw. an die deutsche Lebensweise anpassen.
 - Immigranten sollten in gleichem Umfang wie alle anderen deutschen Staatsbürger:innen Zugang zu sozialstaatlichen Hilfen haben.
 - Die Bundesregierung sollte bei der Verwendung von öffentlichen Unterstützungsleistungen deutsche Staatsbürger:innen bevorzugt behandeln.
 - Deutschland sollte diejenigen, die vor Krieg oder politischer Unterdrückung fliehen, aufnehmen.
 - Kriminelle mit ausländischer Staatsangehörigkeit sollten systematisch abgeschoben werden.
 - Die deutsche Staatsangehörigkeit sollte allen in Deutschland Geborenen ohne Vorbedingungen zugestanden werden. (Geburtsortsprinzip).
 - Deutschland kann viele Immigranten aufnehmen, ohne die innere Einheit zu gefährden.
 - Es scheint so, als wollten Minderheiten nicht gleiche Rechte - sondern Sonderrechte.

D.7 Treatment variables

For the binary treatment, we ask the following question: "Hat sich die Höhe Ihrer Abschlagszahlung für Strom seit der letzten Befragung verändert?" ("Has the amount of your advance payment for electricity changed since the last survey?"), with possible answers: "Ja, meine Abschlagszahlung hat sich erhöht"; "Ja, meine Abschlagszahlung hat sich verringert", "Nein" "weiß nicht". We classify the individuals that have received an increase: "Ja, meine Abschlagszahlung hat sich erhöht", as treated.

The definition of the continuous treatment is slightly more complicated. During the first wave, we ask respondent to provide their current instalment payments for electricity: "Bitte geben Sie die Höhe Ihrer monatlichen Abschlagszahlung [für Strom] an.". Later,

we ask them to report the change in instalment payments if they are treated with the binary treatment: "Bitte geben Sie an, um wieviel sich Ihre monatliche Abschlagszahlung verändert hat, d.h. wieviel mehr oder weniger Sie für Ihre monatliche Stromnutzung zahlen?". We then build the continuous treatment by combining the baseline payment with the reported variation.