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# Household Spending and Fiscal Support During the COVID-19 Pandemic: Insights from a New Consumer Survey\*

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## Abstract

This paper introduces the Consumer Expectations Survey (CES), a new online, high frequency panel survey of euro area consumers' expectations and behaviour. The paper also investigates whether public perceptions about fiscal support measures introduced during the pandemic have influenced spending behaviour. We show that simple and factual information treatments about government support policies that are communicated to random subsets of respondents can help improve consumers' perceptions about the adequacy of fiscal interventions relative to that of an untreated control group. We find evidence that this improvement in beliefs has a causal effect on consumer spending, in particular raising spending on large items like holidays and cars. Moreover, we show that such beliefs influence household expectations about own income prospects, future access to credit and financial sentiment, while they do not affect expectations about future taxes, implying no evidence of Ricardian effects in household behaviour. We find that perceptions affect spending also among households that did not receive any government support, suggesting that fiscal interventions can have broader consequences as they influence the behaviour of groups beyond the targeted ones.

*JEL* Classification Codes: D12, E21, H31

*Keywords*: Consumer Expectations Survey, Fiscal Policy, COVID-19, Household perceptions

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## 1. Introduction

Understanding household expectations and decisions is important for economic research as well as for the design and evaluation of policies. The economic landscape shaped by the pandemic has stressed the need to access household data that are both reliable and collected at a relatively high and timely frequency. In particular, such information helps assess dynamic evolution of ongoing household sector developments, as well as the related policy responses, that often have heterogeneous effects on different population segments.

The aim of the present paper is twofold. First, the paper provides an introductory overview of the Consumer Expectations Survey (CES), a new online high frequency panel survey of euro area consumers' expectations and behavior that is administered by the European Central Bank (ECB). Building on the recent international advances in survey methods, the CES was launched in pilot phase in early 2020 and aims to fill important knowledge gaps that have constrained household sector analysis. The paper describes the CES's main motivation, its topical and country coverage, and its novel features for research and policy analysis. Second, the paper examines the impact of government support measures during the pandemic on household spending and expectations focusing on the role of public perceptions about the adequacy of such fiscal interventions. The COVID-19 pandemic represented a complex and multi-faceted shock that is likely to have had a highly heterogeneous impact on economic agents depending on their own personal or economic situation and characteristics (see also Christelis et al., 2020). It is also widely recognized that the nature of the pandemic shock implied that the needs of individual consumers and households for financial support are likely to have varied across countries, sectors of employment, the nature of employment (e.g., whether it is amendable to remote work) and type of employment contract as well as other demographic characteristics including family and parental status. This highly heterogeneous incidence of the pandemic shock, posed a dramatic challenge to fiscal policy and to the logistics of channeling fiscal support in a manner that was targeted, effective and efficiently allocated through different channels. In the case of the euro area, governments borrowed extensively and provided large-scale financial support to households (and firms) through a variety of channels. Support measures ranged from traditional social security provisions via automatic stabilizers and existing social welfare programs to more time-specific pandemic-related financial support and subsidies including in-kind support (e.g., via extended childcare). In addition, governments supported households indirectly by providing support to firms and employers through direct employment subsidies, loan and other payment guarantees or moratoria (e.g., on rents).

The highly heterogeneous nature of the financial and non-financial needs generated by the COVID-19 shock and its subsequent waves, coupled with the multi-faceted nature of the government response is likely to have generated wide heterogeneity in public perceptions about the overall effectiveness of these policies. Moreover, according to our data, more than 70% of euro area households had not received any pecuniary or non-pecuniary government support by the end of 2020. Still, it is instructive to measure the perceptions of these households. Apart from representing a majority of the population, the views of 'non-recipient' households about the adequacy of fiscal interventions are likely to impact their spending through various channels that we discuss below.

Against this background, we illustrate how the CES can be used to measure directly every household's perceptions about the adequacy of fiscal interventions in ensuring own financial well-being. This provides us with a common metric across households of different needs and characteristics that may or may not have received fiscal support in its various possible forms. We use this measure to track such perceptions over time, and to (exogenously) move such perceptions in order to estimate their impact on household consumption and expectations. We document wide heterogeneity across countries and individual consumers in their perceptions about the adequacy of the government support. Furthermore, there is considerable variation of these perceptions for given (groups of) consumers over time.

While the data suggest a strong positive association between perceptions about fiscal interventions and household spending, identifying a causal role of such perceptions is challenging due to econometric issues (e.g., reverse causality, correlations with time-varying unobservables) that cannot be addressed by panel data techniques (e.g., by accounting for household fixed effects). To this end, we implement a Randomized Controlled Trial (RCT) where we provide CES respondents with simple and factual information about the extent and adequacy of actual government support implemented during the pandemic. We find that these factual information treatments can move consumer perceptions about the adequacy of policy support in an intuitive manner that gives rise to a strong impact on actual household spending. Such causal effects on spending may reflect a number of different transmission channels which we can also investigate using prior and post-treatment data on various expectations from the CES.

In particular, we find that a more positive assessment about government interventions improve household expectations about own income prospects, future access to credit and financial sentiment, that are all conducive to higher spending. On the other hand, such perceptions do not influence consumer expectations about future taxes,

implying no evidence of Ricardian effects in household behaviour. Having shed some light on the mechanism that underlies the role of perceptions about fiscal interventions for household spending, we also investigate whether such perceptions matter for those who did not receive any government support. Notably, we find that these perceptions are important for the broader population and can incentivise spending among ‘non-recipient’ households. This points to the powerful role of perceptions as they operate over and above any immediate effects that government transfers can have on spending. Thus, our evidence suggests that fiscal interventions that are carefully designed and properly communicated to ensure broad public support can have wider consequences as they influence the behaviour of groups beyond those that are immediately targeted.

Our work relates to a broader recent literature which documents wide dispersion in household beliefs about the economy and how those beliefs can influence subsequent economic behavior and policy effectiveness. As discussed in Stantcheva (2020), examples include public perceptions about inequality and social mobility, tax, trade and health-care policies. Roth et al. (2021) find that most households in the US underestimate the debt-to-GDP ratio and reduce their support for government spending once they are informed about the actual government debt. However, these households do not substantially alter their attitudes towards taxation. Coibion et al. (2021) examine the effects of information about the fiscal outlook on US households’ inflation expectations. In general, much of this literature has highlighted limitations in the public’s knowledge about economic policies and the economic mechanisms on which they are assumed to rely. The level of the public’s knowledge is typically much lower than is often assumed by economists (see, e.g., Sapienza and Zingales, 2013) and, as highlighted earlier by Blinder and Krueger (2004), there is an important role for ideology and communication channels, e.g., television and, more recently, social media, in shaping the public’s perceptions.

Our results also contribute to the recent literature that points to the role of effective communication in influencing economic outcomes.<sup>1</sup> In particular, we emphasize the benefits of better communication with the public that aims at raising awareness about the nature, magnitude and aims of government support. Moreover, our finding that public perceptions about fiscal interventions can incentivize household spending provides direct evidence in favor of the widely held view that expansionary fiscal interventions can boost consumer and business confidence, which in turn can trigger private spending and investment.<sup>2</sup> Coibion et al. (2020b) fielded an information experiment in the early stages of the pandemic (April 2020) and found that information about fiscal and monetary policy responses to COVID-19 crisis had limited effects on US household expectations and spending plans. As the authors argue, this may reflect that policy actions are likely to reveal a bad state of the economy (i.e., information effects) that offsets any positive effect that one would anticipate out of a major policy intervention. Instead, we find that providing information about the extent and adequacy of fiscal packages influences euro area households’ economic expectations and incentivizes spending, especially on large items. While a comparison with the results of our study is not straightforward (they may differ due to several reasons including differences in the institutional environments, the pandemic’s impact, generosity of fiscal packages, expectations and behavior measured in the two surveys) one important source of difference could be the timing of the two experiments. As will be discussed, we fielded our RCT in November 2020 (i.e., during the second COVID-19 wave) when households had likely already internalized the economic setbacks from the pandemic and thus were less likely to extract a negative signal about the state of the economy.

A growing number of papers has already started to study the overall impacts and effectiveness of the fiscal policy interventions during the COVID-19 pandemic, although we are the first, to the best of our knowledge, to study directly how consumers perceptions related to the effectiveness of these policies may have shaped consumer behavior and thereby influenced the overall stabilization benefits from the large scale fiscal intervention. Coibion et al. (2020a) find that somewhat more than 20% of survey respondents would use the 2021 tax rebates mainly to increase spending. In the case of the euro area, Christelis et al. (2020) also highlight how the willingness to spend out of a one-time transfer varies widely across consumer groups and, consistent with a strong role for precautionary savings, that those

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<sup>1</sup> Coibion et al. (2022a) and Bholat et al. (2019) show that central bank communication can be made more effective by simplifying the language used and by making the content more directly relatable to people’s lives. Stantcheva (2020) has highlighted how individuals’ understanding and support for economic policy can be influenced by instructional videos that emphasise explanation of how policies work and what effect they have on economic agents.

<sup>2</sup> Carroll et al. (1994) and Ludvigson (2004) have emphasized the role of consumer confidence on predicting spending. Konstantinou and Tagkalakis (2011) find evidence that a reduction in direct taxes boosts consumer and business confidence. In addition, Bachmann and Sims (2012) show, using a structural VAR, that confidence represents an important channel via which government spending shocks affect economic activity.

consumers with the greatest financial fears linked to COVID-19 are less likely to spend any direct payments. Other studies have focused on the support to the corporate sector via wage or other subsidies and generally point to some positive stabilization benefits by protecting employment (e.g., Lalinsky and Pal, 2021) or by being sufficiently well targeted to avoid an excessive level of support for relatively unproductive or “zombie” firms (e.g., Bighelli et al., 2020). As the evidence of these studies mainly regards the first year during the pandemic, it is probably fair to say that the final verdict on the overall effectiveness of the government support measures introduced in response to COVID-19 will only emerge gradually over time with the emergence of further research and data.

The layout of the remainder of the paper is as follows. Section 2 presents the overview of the Consumer Expectations Survey highlighting its broad topical coverage, high statistical quality and high degree of flexibility associated with its online survey mode. Section 3 presents the RCT design and related econometric analysis of whether and how public perceptions about government fiscal support during the pandemic have influenced spending behavior. Section 4 concludes.

## 2. Introducing the CES: An overview of key features

The CES is a mixed-frequency, online, multi-country and panel survey of the euro area household sector that aims to provide timely and reliable data to support euro area policy analysis and research. In this section we provide an introductory overview of the CES. For further details see also the supplementary material as well as information about the survey on the CES webpage and ECB (2021) which provides a complete overview of the CES and a detailed evaluation of the first waves of the survey.

The CES was launched in January 2020 as a new online household panel for the euro area. In its initial phase of development, the CES has benefitted from best international practice and innovation in survey-based measurement of expectations (see Manski, 2004) and, in particular, from the experiences in other central banks in setting up similar online surveys. De Nederlandsche Bank has a long tradition in conducting its household survey online, while the Federal Reserve bank of New York has also set up a Survey of Consumer Expectations.<sup>3</sup> More recently, similar surveys have also been set-up by the Bank of England, the Bank of Canada, the Bundesbank and the Banca D’Italia either for the collection of consumer data on an ad hoc or more regular basis (see Anderson et al., 2016; Gosselin and Kahn, 2015; Beckmann and Schmidt, 2020; Rondinelli and Zanichelli, 2021). The CES covers a range of measures of household perceptions about various economic concepts, their expectations for these concepts in the future and reported household behaviour including household consumption, investment and borrowing decisions as well as labour market transitions. The *mixed-frequency modular survey structure* of the CES is summarised in Table 1. The survey includes a short 5-minute recruitment interview where respondents are first told about the nature of the survey, and its importance for euro area policy analysis and research and then invited to participate. If they agree to participate, respondents are then invited to complete a background questionnaire online. The purpose of this background questionnaire is to capture a range of relatively time-insensitive information, including household composition, educational attainment, housing tenure, and total net income. Two other regular modules, the core “Monthly” and “Quarterly” questionnaires, collect more time-varying information, respectively. Table A1 in the Online Appendix describes in more detail the range of topics covered in the monthly and quarterly modules of the CES.

Given its intended use for scientific research and monetary policy analysis the CES aims to achieve *comparable multi-country population representative samples*. Over the first 18 months of the survey, data for six euro area countries (Germany, France, Italy, Spain, The Netherlands and Belgium) were collected. This delivered a total average monthly sample size of just over 10,000 individual respondents for the euro area as a whole (see also Table A2 in the Online Appendix). The four larger countries each deliver samples of approximately 2,000 responses each month while data from 1,000 respondents are collected in The Netherlands and Belgium. The CES provides representative data for the adult population aged 18 to 70 years that is residing in each of the participating countries. A unique and distinguishing feature of the CES is to combine probabilistic sampling using Random Digit Dialling (RDD) with non-probabilistic recruits from existing online panels. Going forward it is intended to further expand both CES’s country coverage and the overall sample size. This expansion should enable a richer and more robust analysis of specific groups and thus help to shed better light on household sector heterogeneity.

A final critical feature of the CES dataset is its rich *panel dimension*. The repeat surveying of consumers ensures that it is possible to track respondents over-time. As a result, it is possible to monitor closely revisions in consumer expectations in response to actual and perceived economic outcomes and shocks. Equally, the panel component helps to ensure that, through the use of panel econometric estimation, it is possible to e.g., net out the

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<sup>3</sup> For more details see the SCE webpage: <https://www.newyorkfed.org/microeconomics>

contribution of unobserved, time-invariant, consumer heterogeneity that could otherwise distort the identification of key parameters. Experience with the CES to date has demonstrated that it is possible to ensure a strong panel component. By looking at the sample of respondents over the period April 2020 to April 2021 (see also Table A2) an average of 44.4% of respondents had completed more than 8 survey rounds, with 17.5% and 15.2% completing between 4-8 and 2-3 rounds, respectively. In the present analysis, we make use of the panel structure of the survey by tracking changes in spending behaviour over the months following the implementation of our RCT in November 2020.

### **3. Government Support and Household Spending During COVID-19: The Role of Consumer Perceptions**

This section builds on the flexibility and timeliness of the CES to empirically examine the role of public beliefs about the effectiveness of fiscal interventions on household spending. We also shed light on the specific channels of transmission by examining whether and how such beliefs influence other household expectations (e.g., for future income and taxes).

#### **3.1 Consumer perceptions about government support**

The highly heterogeneous and dynamic incidence of the pandemic shock posed a dramatic challenge to fiscal policy and to the logistics of channeling fiscal support in a manner that was targeted, effective and efficiently allocated through different channels. In the case of the euro area, governments borrowed extensively and provided large-scale financial support to households and firms through a variety of channels. According to the data we collected at the end of 2020, the vast majority of households (more than 70%) reported that they had not received any direct or indirect government support during the COVID-19 outbreak. On the other hand, as shown in Figure 1, government support was provided in various forms to the remaining households. For example, about 6% of respondents reported that they received a payment for lost earnings from employment and, while there are some notable differences in this figure by countries, it is generally believed that most governments were effective in protecting household incomes in the euro area during the pandemic. In any case, one should note that direct fiscal transfers are relevant only for a minority of typically less well-to-do households. A number of studies has investigated the extent to which such transfers received by households in times of crises are channeled into spending.<sup>4</sup> We contribute to this literature by investigating whether public perceptions about the effectiveness of fiscal interventions affect household spending, over and above the role that financial support may have in boosting consumption of those who receive it.

In particular, we ask respondents in the survey to directly assess the adequacy of fiscal support measures with reference to the financial well-being of their household:

*Governments are taking financial support measures in response to the coronavirus (COVID-19) outbreak. How do you rate the adequacy of these measures for your household's financial situation?*

Respondents can then provide an answer that ranges between 0 (very poor) and 10 (very good). This variable allows us to gauge the idiosyncratic perceptions about fiscal policy effectiveness and use a common metric across households of different needs and characteristics that may or may not have received fiscal support in its various possible forms. We have repeated this question in a number of CES waves between July 2020 and August 2021. On average, there are relatively small changes in the perceived adequacy in the pooled euro area data over time. However, as can be seen in Figure 2, there are some differences and more significant time-variation across countries, with fiscal interventions perceived in general to be more adequate in Germany and the Netherlands compared with Italy and Spain (i.e., the two countries that were more heavily affected during the initial COVID-19 outbreak).

One should also note that behind these averages there is both considerable heterogeneity across demographic groups as well as substantial variation in the perceptions of given households over time. For example, according to (non-reported) results from a panel random effects regression, there is a strong positive association between being younger, male, earning higher income, expecting an improvement in own financial situation and assessing fiscal support to be more adequate. On the other hand, self-employed and those facing liquidity constraints perceive government interventions to be less adequate. Moreover, a positive association between household income, expected improvement in own financial situation and perceived adequacy also emerges from a household fixed effects regression. The latter suggests that perceived adequacy per respondent exhibits sufficient variation over our survey period in order to identify some significant associations with other time-varying covariates and after taking into account various household unobserved, time-invariant characteristics. This provides solid grounds for using a directly

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<sup>4</sup> For example, Shapiro and Slemrod (2003) and Sahm et al. (2010) examine the impact on consumption of the tax rebates received in 2001 and 2008, respectively. Recently, Coibion et al. (2020a) estimate the marginal propensity to consume out of paychecks received during the COVID-19 outbreak.

elicited measure on household perceptions about the effectiveness of fiscal interventions to capture significant household heterogeneities and thus be informative especially during the COVID-19 outbreak where households were hit by a complex and multifaceted shock.

While the raw data suggest a positive association between perceived adequacy of government interventions and spending, especially on big ticket items (durables, cars and holiday packages), it is challenging to identify a causal effect of public perceptions. Econometric methods that would utilize panel data (e.g., fixed effects), while useful in netting out the effects of household unobserved factors that are time invariant, cannot address the issues of reverse causality (i.e., those who spend on average more tend to find the fiscal measures more adequate) as well as the confounding role of time varying unobserved traits (e.g., time varying optimism may correlate with both spending and perceptions about government support). One way to address these econometric challenges is to field a Randomized Control Trial (RCT) that provides information to random subgroups of respondents relative to an untreated control group and makes them revise in a significant way their assessment about the effectiveness of fiscal policies.

### 3.2 Randomized Control Trial design

Against this background, in November 2020, we augmented the regular CES to implement our RCT and asked some additional questions focusing on household perceptions about government support. Households were randomly allocated to one of four groups that were roughly equally-sized by country and sample type. The first group serves as the control and simply proceeds with completing the remainder of the regular survey without receiving any specific information treatment. Instead, the second group (Treatment 1) received the following information:

*“In order to help <country name> to recover from the coronavirus (COVID-19) outbreak, the Government has recently agreed on a comprehensive package of measures worth <€XX>. This is a very substantial package that, in terms of size, corresponds roughly to <€ZZ> per person in <your country>. A large part will support investment, employment and economic recovery.”<sup>5</sup>*

The above information features qualitative and quantitative elements (the latter providing both an aggregate and a per capita figure that is easier for respondents to conceptualise) that aim at providing factually accurate information about the fiscal packages and their intended stabilisation goals (“economic recovery”). Notably, this and subsequent treatments provide households with *publicly* available information and therefore if households were fully informed about the extent and adequacy of the government support and its intended use, they should exhibit zero response to the treatments.

The third group (Treatment 2) received the following information:

*“In order to help the EU to recover from the coronavirus (COVID-19) outbreak, EU leaders have recently agreed on a comprehensive package of measures worth €1,8 trillion. This is a very substantial package that, in terms of size, corresponds roughly to € 4,000 per person in the EU. A large part will support investment, employment and economic recovery.”*

This information focuses on the extent and adequacy of EU-wide fiscal support and aims at assessing whether respondents view an EU package as equally effective with a domestic one. Last, the fourth group received a combination of the information related to both country-specific and EU-wide fiscal support that read as follows:

*“In order to help <country name> to recover from the coronavirus (COVID-19) outbreak, the Government has recently agreed on a comprehensive package of measures worth <€XX>. This is a very substantial package that, in terms of size, corresponds roughly to <€ZZ> per person in <your country>. In addition, in order to help the EU, EU leaders have recently agreed on a comprehensive package of €1,8 trillion. This is another very substantial package that, in terms of size, corresponds roughly to € 4,000 per person in the EU. A large part of these packages will support investment, employment and economic recovery.”*

Following the above information treatments, survey participants were asked a few follow-up questions to measure the instantaneous effect of the treatments on the perceived adequacy of fiscal packages. In particular, respondents were asked to indicate the extent to which they find adequate the support measures taken by the governments.

The panel structure of the survey allows assessing the impact on consumer spending of (the exogenously revised) household perceptions about fiscal policies by utilising information on durable and non-durable consumption collected in follow up waves. Households were asked in successive months (December, January and February) whether they had purchased any of the following large durable or luxury goods over the previous month: 1) house; 2)

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<sup>5</sup> The numbers in euro given for the total package (per person) were as follows. BE: 68 billion (6,000); FR: 522 billion (8,000); DE: 1,400 billion (17,000); IT: 670 billion (11,000); NL: 107 billion (6,000); ES: 216 billion (4,500)

car; 3) other durable goods (e.g., home appliance, furniture, electronic items incl. gadgets); 4) travel vacation; or 5) luxury goods (e.g., jewellery, watches). Households were also asked in January 2021 to report their non-durable consumption over the previous month for a range of different categories including: 1) food, beverages, groceries, tobacco; 2) restaurants, cafes, canteens; 3) housing (incl. rent); 4) utilities; 5) furnishing, housing equipment, small appliances and routine maintenance of the house; 6) debt payment; 7) clothing, footwear; 8) health care and personal care products; 9) transport; 10) travel, recreation, entertainment and culture; 11) education; and 12) other.

Making use of the panel structure of the survey, we track spending on durable and non-durable goods over the months following the implementation of our RCT in November 2020. For durables and large ticket items, we are able to trace both the immediate response (collected in December 2020 survey with reference to the period in the immediate aftermath of our RCT) as well as more persistent effects on spending as this is also measured in January and February 2021. On the other hand, non-durable spending relates to expenditures during December 2020 (i.e., one month after our RCT). In all cases, information on spending is recovered from independent modules that were fielded one (or more) month(s) post-information treatments and therefore our findings are unlikely to suffer from short-term framing effects that information treatments may create. While self-reported spending naturally has some associated measurement error due to rounding and the difficulty of recalling spending on specific categories with precision, the quality of the reported information has generally been found to be high (see the further description in the Online Appendix and ECB, 2021). Similarly, Coibion et al. (2022a) document consistency between self-reported spending and scanner-tracked spending of U.S. households participating in the Nielsen Homescan Panel. In any case, one should note that the RCT is robust by design to measurement error as respondents who are more prone to misreport their spending are equally represented (due to randomization) in the control and treatment groups.

One common concern for the results out of an RCT has to do with the prevalence of experimenter demand effects.<sup>6</sup> The latter imply that respondents in the treatment groups infer the experimenter's objective and report biased expectations and behaviour that conform to this objective. In our context, we doubt that experimenter demand effects are likely to drive our results. First, respondents are provided with factual information about government or EU spending without an explicit reference that this information is part of an experimental study. In addition, when respondents first join the CES they are informed that the survey is conducted on behalf of a European institution/organisation, thus experimenter demand effects would tend, other things equal, to bias more their views in relation to European than to local institutions. The fact that respondents who receive information about the government fiscal package only (Treatment 1) and the EU package only (Treatment 2) revise their expectations about adequacy of fiscal interventions in a virtually identical way suggests that experimenter demand effects are minimal. Second, we collect pre-treatment information on respondents' perceived adequacy one month prior to fielding our RCT, thus respondents are not primed to think that the support is adequate and indeed are unlikely to remember their exact answer and adjust their post-treatment perceptions in a systematically biased way.<sup>7</sup>

### 3.3 The effects of information treatments on perceptions

In order to estimate the causal effect of consumers' perceptions about the adequacy of fiscal support on spending behaviour and household expectations we require our RCT approach to generate (sufficient) exogenous variation in such perceptions. To assess the influence of our information treatments on perceived adequacy of the fiscal interventions, we first estimate regressions of the form:

$$Post_i = a_0 + b_0 Prior_i + \sum_{j=1}^3 a_j \times I\{i \in Treat j\} + \sum_{j=1}^3 b_j \times I\{i \in Treat j\} \times Prior_i + error_i, \quad (1)$$

where  $i$  denotes respondent.  $Prior_i$  denotes the respondent's prior belief about the adequacy of fiscal support provided by national governments and/ or the EU and it was measured in the October survey (i.e., one month before implementing the RCT).  $Post_i$  refers to the respondent's posterior belief measured after the implementation of the

<sup>6</sup> For a comprehensive discussion on this issue see Haaland et al. (2021). De Quidt et al. (2018) introduce a technique for addressing robustness to experimenter demand effects.

<sup>7</sup> Also, as discussed, we measure realised consumption (instead of consumption plans) in the months following our RCT, which makes it unlikely that respondents adjusted their spending to conform the objective of an experiment in which they took part (at least) one month earlier. More generally, existing evidence suggests that experimenter demand effects are likely not of large quantitative importance in the context of macro-expectations (see Roth and Wohlfart, 2020).



RCT in November.  $I\{i \in Treat\ j\}$  is an indicator variable if respondent  $i$  is in treatment group  $j$ . The omitted category is the control group, so that coefficients  $\{a_j\}_{j=1}^3$  and  $\{b_j\}_{j=1}^3$  can be interpreted as being relative to the control group. We take into account country fixed effects and use Huber-robust regressions to systematically control for outliers. We also eliminate roughly 10% of households that according to para-data spent virtually no time (less than two seconds) on the screen showing the information treatments and as a result they have likely ignored the provided information.

By regressing posterior perceptions on prior perceptions, we estimate a specification that is consistent with Bayesian learning in which agents form perceptions as a combination of their priors and the signals they receive. As discussed in Coibion et al. (2018), the weight on their prior perception (coefficients  $b$ ) is an indication of how noisy/informative respondents assess the signals to be. The coefficient on the prior belief for treated households ( $b_0 + b_1, b_0 + b_2, b_0 + b_3$ ) should generally be between 0 and 1, with a value of 1 indicating that no weight is assigned to new information and full weight is being assigned to prior beliefs. Instead, a zero coefficient on priors for treated groups indicates that respondents are revising their beliefs fully to the provided signal regardless of their prior beliefs. Specification (1) allows this slope coefficient to vary across treatment groups in order to estimate the extent to which agents respond to different signals in updating their beliefs. Coefficients  $\{a_j\}_{j=1}^3$  estimate where the signal is relative to the average prior belief (it may be positive if a signal is above initial beliefs or negative if a signal is below initial beliefs).

Figure 3 gives a visual representation of estimating equation (1) by plotting the prior perception about adequacy of government support relative to its posterior. All three treatments induce quite similar revisions to household perceptions about fiscal packages. Intuitively, after receiving some factual information about the fiscal packages and their intended stabilisation goals, most households revise upwards their perceived adequacy relative to their priors and more so among those who originally viewed the packages as less adequate.

We present the underlying regression results in Table 2, specification (1). The coefficient on the prior of the control group is .62. Given that the control group does not receive any information, one might expect an estimated coefficient around 1. Yet this reflects the fact that we placed the pre-treatment question one month prior to the implementation of the RCT in order to avoid framing respondents by repeating similar questions in the course of the same survey module. Despite the fact that our underlying variable is a categorical one that takes discrete values from 0 to 10, the significance of the estimated coefficients on the treatment variables implies a revision of the priors for each of the three treatment groups. However, as there are not notable differences among the estimated effects for each of the three treatment groups we can combine them into one and estimate again (1). Results are shown in specification (2) of Table 2 and the implied F statistic is about 18 which implies that the RCT is able to generate significant exogenous variation in the perceived adequacy of government support. In what follows, we use this specification as a first stage in IV regressions to estimate the total effect of perceived adequacy of government support on household spending. These treatment effects are useful because they shed light on the process behind household perceptions about public policies. They imply a rejection of fully-informed agents even on a subject that received considerable media attention during the COVID-19 outbreak. They suggest that communicating in a simple and direct way (e.g., by reference to the total value of support and by making it personally relevant to households by expressing it on a per capita basis) and explaining the purpose (“economic recovery”), can improve public perceptions about the effectiveness of such policies.

### 3.4 The Effects of perceived adequacy of government support on spending

We estimate the effect of perceived adequacy of government support on purchases of larger goods and services by regressing indicator variables for specific purchases on ex-ante expectations and household controls:

$$PurchDur_i^k = \alpha_1^{(k)} Post_i^{adequacy} + \alpha_0^{(k)} Prior_i^{adequacy} + \gamma(PlanDur_i^k) + Controls + error_i^{(k)}, \quad (2)$$

where  $PurchDur_i^k$  is an indicator variable equal to one (i.e., the extensive margin) if household  $i$  purchased a large durable good/service of type  $k$  in the previous month. The specification includes an additional indicator variable ( $PlanDur_i^k$ ) which represents households that reported prior to the information treatments that they plan to purchase large durable goods/services of type  $k$  in the next 12 months. Our approach is therefore effectively focusing on either

‘surprise’ purchases (or ‘surprise’ postponement of purchases) relative to stated (pre-treatment) plans.<sup>8</sup> We also take into account a vector of household controls (age, household size, log income, education, liquidity status and country fixed effects) to increase the efficiency of our estimates. We instrument for posterior beliefs about adequacy of government interventions using the information treatments jointly and their interaction with household priors (i.e., using equation (1) when the three information treatments are combined). Following Coibion et al. (2022a) and Coibion et al. (2022b), the first stage is estimated by Huber regression and a jackknife approach is used in the second stage to take into account outliers in both stages. Our IV regressions estimate the total effect of (an exogenous change in) perceived adequacy of fiscal support on household spending. As we show in section 3.5 this total effect can capture different channels that may operate through revisions in various expectations and beliefs.<sup>9</sup>

Table 3 shows results for purchases of the various large items, as they were reported in December 2020 survey (referring to the one-month period following the implementation of our RCT). The first-stage F-statistic is about 16. Thus, the RCT approach is successful in generating sufficient exogenous variation in perceptions to help identify the causal effect of perceived adequacy on household spending. Moreover, p-values for over-identifying restrictions tests are comfortably above 10 percent. We estimate that an (exogenously induced) increase in perceived adequacy of fiscal interventions increases significantly the likelihood of purchasing a number of large items such as a house, car, holidays and luxury goods (incl. gadgets). For example, an assumed unit increase in perceived adequacy (measured on a 0 to 10 scale) implies a 4.7 pp higher probability of purchasing cars and holiday packages in the month following the implementation of the RCT. Notably, these estimated effects are quite persistent in each of the follow-up two months (Online Appendix Table A3 and Table A4 show the results for two- and three- months after fielding our RCT, respectively). The sizeable effects we estimate after informing respondents about actual government packages can be consistent with triggering spending among those who had postponed it during the first ten months of the COVID-19 outbreak and/or bringing forward spending among those who had planned to spend more in the post-pandemic period.

Having identified a strong and persistent effect of public perceptions about fiscal support on purchasing various large items, we also investigate whether such perceptions influence non-durable spending on goods and services that are typically purchased at a higher frequency. To this end, we regress household ex-post non-durable spending on beliefs:

$$(\log Spend_i) \times 100 = \alpha_1 Post_i^{adequacy} + \alpha_0 Prior_i^{adequacy} + Controls + error_i, \quad (3)$$

where the dependent variable is the log of reported household spending in the last month that is recorded in January 2021 (i.e., two months after our RCT),  $Post_i^{adequacy}$  is the posterior (after treatment) perceived adequacy of household  $i$ . We control for prior beliefs ( $Prior_i^{adequacy}$ ) as well as a vector of household controls. Equation (3) thus estimates the reduced-form ex-post response of non-durable consumption to changes in perceived adequacy of fiscal support. As before, we instrument for the set of posterior beliefs using equation (1). Our findings (Table 4; col. 1) do not suggest any significant effect of perceived adequacy of fiscal interventions on total non-durable spending. Furthermore, we investigate whether public perceptions of government support influence the allocation of non-durable spending across various items. To this end, we follow the same estimation approach as in equation (3) by estimating:

$$BudgetShare_i^k = \alpha_1^{(k)} Post_i^{adequacy} + \alpha_0^{(k)} Prior_i^{adequacy} + Controls + error_i^{(k)}, \quad (4)$$

<sup>8</sup> Given that large purchases are relatively infrequent, conditioning on whether any purchases are planned or not helps yield more precise estimates, although the time horizon for the question about planned purchases is longer than one month.

<sup>9</sup> As we effectively have one exogenous instrument, we cannot separately identify the effect of each of these channels on spending. The exclusion restriction required for an IV estimation in a context of an RCT may be violated, especially in situations where information treatments influence respondents’ attention and emotions that also bias their instantaneous reporting on outcome variables such as readiness to spend (see Haaland et al., 2021). Instead, our outcome variable refers to realised spending (reported at least one month after fielding our RCT) and is likely to include adjustments in spending due to revisions in various beliefs and expectations that were triggered by the information treatments. Moreover, in virtually all our estimations over-identifying restrictions tests are comfortably above 10 percent.

where  $BudgetShare_i^k$  is the share (measured in percent) of the household  $i$  budget that is spent on non-durable category  $k$ . The results (Table 4; col. 2-8) point toward two margins along which households that find fiscal interventions more adequate tend to increase somewhat their budget shares: clothing and recreation activities. Thus, while we do not find evidence that a more positive assessment of government support measures increases non-durable spending overall, we find that it encourages some spending reallocation towards certain discretionary items that had been compressed in response to pandemic-induced financial concerns (see Christelis et al., 2020).

Overall, results from this section suggest that perceived adequacy of fiscal interventions can have discernible effects on spending behaviour and thus highlight the importance of such public perceptions for reviving economic activity. In particular, a positive assessment of government support can incentivise significant and persistent spending especially on large durable items. To better understand the mechanism behind these results one needs to examine the reasons that make consumers more confident to spend on goods when they believe that governments are providing adequate support to help them better deal with the repercussions of a large, ongoing shock. For example, in view of an effective fiscal intervention, households are likely to expect that their own income prospects will be less impacted by the crisis or even improved. In a related vein, households should anticipate that future economic conditions will facilitate access to credit, thus they may perceive that they are less likely to be liquidity constrained. In addition, households are likely to form a more positive outlook about the country's overall economic prospects. More generally, a government intervention that is seen as adequate may provide sufficient public insurance and a safety net such that households are likely to exhibit less precautionary behaviour and potentially increase spending. In this context, it is also instructive to examine whether our baseline findings for the role of public beliefs hold irrespective of whether households actually receive government support or not.

### 3.5 Perceived adequacy of government support and household expectations

In what follows we shed light on some specific channels through which an increase in public perceptions about the adequacy of fiscal interventions can trigger spending. To this end, we investigate whether the exogenous increase in respondents' perceptions about the government packages have an impact on some of their (post-treatment) expectations. We examine a number of expectations that may have been influenced after implementing our RCT and could themselves impact household spending behaviour. First, we investigate whether households with a higher perceived adequacy about fiscal packages also expect an increase in their own household income in the year ahead. To this end, we use post-treatment expectations about household income reported in December 2020 and exploit a similar specification as used in in Section 3.4:

$$PostIncGrowth_i = \alpha_1 Post_i^{adequacy} + \alpha_0 Prior_i^{adequacy} + \gamma PriorIncGrowth_i + Controls + error_i \quad (5)$$

According to the results shown in Table 5, specification (1), higher perceived adequacy of fiscal support has a positive effect on expected household income growth (significant at 10%).

In a related vein, we also estimate the effects of perceived adequacy on household expected access to credit as liquidity constraints can prevent spending while government packages often aim to facilitate access to liquidity for firms and households. Like for income expectations, we use information reported in December (post-treatment) about expected access to credit over the following twelve months and estimate an equation similar to (5). We find that a more positive view about adequacy of fiscal interventions makes households more optimistic about their future access to credit.

Moreover, we examine the effects of perceptions about fiscal interventions on household financial sentiment.<sup>10</sup> In particular, we model the likelihood of expecting own financial situation to improve (somewhat or a lot) over the next 12 months by estimating an equation similar to (5). We utilise pre- (post-) treatment information from the November (December) monthly surveys. Results reported in Table 5, specification (3), suggest that an assumed unit increase in the perceived adequacy implies a 6.8% higher likelihood of expecting household financial situation to improve over the year ahead. Taken together, the above effects of higher perceived adequacy on improved

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<sup>10</sup> Respondents are asked every month: "Looking ahead, do you think your household will be financially better off or worse off in 12 months from now than it is today?" and provide answers on a 1 (much worse off) to 5 (much better off) scale.

own income prospects, credit access conditions and financial sentiment are consistent with an increase in household spending.<sup>11</sup>

While the effects on expectations that we have identified above are conducive to spending, we also can examine the possible relevance of Ricardian behaviour. In particular, informing households about a generous fiscal package in response to the COVID-19 outbreak may make many households expect that there will be an inevitable increase in the tax burden that they will have to service in the foreseeable future. In this case, households will likely decrease or delay further their spending in anticipation of a future negative income shock. Our survey includes questions that can address this issue directly. In particular, after implementing our RCT, we asked households the following question:

*Please think about the total taxes (including income, local, property and sales taxes) that a household like yours is currently paying. Do you think that, 12 months from now, the total amount of taxes being paid by this household will have increased or decreased compared to what they are paying now?*

In a follow-up question we also asked households to give an estimate of the percentage change they expect on total taxes.

Following the estimation approach discussed above, we estimate an equation similar to (5) to assess the impact of perceived adequacy on expected tax burden (using as dependent variable the qualitative question on taxes shown above). Results from this specification are shown in Table 5, specification (4), and suggest a statistically insignificant and quantitatively unimportant effect of perceived adequacy on expected tax burden. Results from a second specification that uses the expected percentage change on total taxes as dependent variable (not reported) also imply an insignificant effect. Thus, we conclude that our information treatments related to government spending and support packages do not influence consumer expectations about future taxes implying no evidence of a Ricardian channel influencing household spending behaviour.

In sum, the above analysis sheds light on some specific channels via which factual information about the extent and adequacy of fiscal stimulus during the pandemic can incentivise household spending. It may be the case that our information treatments also influence perceptions on, e.g., fiscal sustainability and government quality that we do not measure explicitly in our data. Related to these possible channels, Roth et al. (2021) find that US households that were informed in a pre-pandemic experiment about true government debt (that was higher than their initial beliefs) become less supportive of government spending while they do not alter their views on taxation. In this vein, examining household perceptions and expectations in a post-pandemic environment with historically high levels of (public and private) debt represents a fruitful avenue for future research.

Last, we examine whether the role of perceptions that we have identified differs between households that had actually received government support by the end of 2020 and those that had not. Such an analysis sheds light on the extent to which the household perceptions and beliefs mechanism that we have identified operates over and above the direct effect of particular supports that were received. To this end, we re-estimate equation (2) separately for each of these two household groups. Results are shown in Online Appendix Table A5 and Table A6. The implied effects on spending on large items are comparable across the two groups and, if anything, perceived adequacy of government support can incentivise spending as strongly for households that did not themselves receive any support. This points to the powerful role of perceptions as they operate over and above any immediate effects that government transfers can have on spending. Thus, our evidence suggests that fiscal interventions can have broader consequences as they influence the behaviour of household groups beyond the ones who actually receive government support.

#### 4. Conclusions

This paper introduces the Consumer Expectations Survey (CES), an important new resource for survey-based research of household sector topics in Europe. The CES is an online, high frequency panel and multi-country survey of euro area consumers' expectations and behaviour that builds on recent advances in survey methodology and measurement. The paper provides an overview of the CES's main motivation, its novel features, sample design, topical and country coverage. For example, the CES collects data centrally for multiple countries in a synchronised and

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<sup>11</sup> Furthermore, we also explored whether perceptions about fiscal interventions influence household expectations about inflation and GDP growth over the next twelve months. We do not identify any significant effects of perceptions on these two variables. This suggests that the effect of perceived adequacy on spending is more likely to operate via a better outlook about *own* income and financial situation rather than via improved expectations for the whole economy.

harmonised manner using a dual sampling strategy that includes a very substantial probabilistic component which helps to ensure that the results are representative of country populations and are available with sufficiently large sample sizes to enhance the quality of econometric analysis.

To help illustrate the power of this new resource for survey-based research, the paper also investigates whether household perceptions about fiscal support measures introduced during the pandemic have influenced spending behaviour. This analysis relates to the growing body of empirical literature (Stantcheva, 2020; Sapienza and Zingales, 2013 and Blinder and Krueger, 2004) studying households' belief formation, in particular in relation to economic policies, and how such beliefs may influence subsequent economic behaviour. The COVID-19 pandemic, which gave rise to considerable heterogeneity and time-variation in individual households' needs for government support as well in governments' policies and communication in response to those needs, provides a very powerful context for such an analysis. To investigate the causal effects of perceptions about government support we implement an RCT that generates exogenous variation in household beliefs about fiscal policy effectiveness that can then be directly linked to consumer spending behaviour in subsequent survey rounds.

Our results show clearly that simple and factual information treatments about government support policies and their aims that are communicated to random subsets of respondents can help improve consumers perception about the adequacy of fiscal interventions. Moreover, such an improvement in consumer beliefs has a strong and persistent positive causal effect on their spending, raising spending on big ticket items of a discretionary nature, like holidays and cars. We find evidence that respondents with a more positive assessment about fiscal interventions also hold more optimistic expectations about own income prospects and their future access to credit. Instead, our information treatments do not influence consumer expectations about future taxes implying no evidence of a Ricardian channel that would attenuate the stimulatory effects of fiscal policy. Moreover, this perceptions channel operates over and above any direct effects associated with the actual receipt of government transfers and support. In particular, the perceptions channel is – if anything – stronger for those households that did not themselves receive any support. This points to the powerful role of perceptions as they operate over and above any immediate effects that government transfers can have on spending. Thus, our evidence suggests that fiscal interventions and the related communication can have broader consequences as they influence the behaviour of household groups beyond the ones who actually received government support.

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Table 1: Overview of the CES Modular Structure

	<b>Recruitment Interview</b>	<b>Background Interview</b>	<b>Monthly Questionnaire</b>	<b>Quarterly Questionnaire</b>
<b>Purpose</b>	First contact Confirm willingness to participate	Initial online interview	Regular online interview of consumer perceptions expectations and behaviour	More detailed online interview of consumption patterns, labour market and financial activities
<b>Nature of information collected</b>	Basic characteristics  Reasons for non-participation	Detail on respondents' background characteristics  Relatively time-insensitive data	Time-sensitive data  Point estimates and mean values  Probabilistic data and measures of uncertainty	Time-sensitive data  Point estimates and mean values  Probabilistic data and measures or uncertainty
<b>Duration</b>	5 Minutes (By telephone)	10 Minutes online	20 Minutes online	10 Minutes online
<b>Survey Mode</b>	Telephone	Online	Online	Online
<b>Timing</b>	Once-off	Upon entry into panel  Repeated after 1 year's participation	Monthly	January, April, July, Oct

Table 2. Treatment effects on perceived adequacy of government support

	Perceived adequacy of government support	
	Separate treatments	Pooled treatments
	(1)	(2)
Prior	0.621*** (0.016)	0.622*** (0.017)
I{Treatment 1} × Prior	-0.051** (0.024)	-
I{Treatment 2} × Prior	-0.087*** (0.024)	-
I{Treatment 3} × Prior	-0.045* (0.023)	-
I{Treatments 1, 2, 3} × Prior	-	-0.061*** (0.019)
Indicator variables, I{}		
Treatment 1 (Country FP)	0.523*** (0.142)	-
Treatment 2 (EU FP)	0.639*** (0.143)	-
Treatment 3 (Country & EU FP)	0.561*** (0.139)	-
Treatments 1, 2, 3	-	0.573*** (0.114)
Observations	9,122	9,122
R squared	0.401	0.399
F stat	7.715	18.53

**Notes:** Reported estimates are based on Huber-robust estimator and all regressions use sampling weights. Heteroskedasticity robust standard errors are reported in parentheses. \*\*\*, \*\*, \* denote statistical significance at 1, 5 and 10 percent levels.



Table 3. Effects of perceived adequacy of government support on actual purchases of durable/luxury goods and services (one month post-treatment).

	Home	Durable	Car	Holiday	Luxury
	(1)	(2)	(3)	(4)	(5)
Posterior: perceived adequacy	0.030*** (0.008)	0.060 (0.040)	0.047*** (0.014)	0.047*** (0.013)	0.037** (0.015)
Prior: perceived adequacy	-0.015*** (0.005)	-0.036 (0.023)	-0.026*** (0.008)	-0.024*** (0.008)	-0.018** (0.009)
Plan to buy a given durable	0.110*** (0.022)	0.226*** (0.014)	0.068*** (0.012)	0.040*** (0.007)	0.230*** (0.026)
Education: secondary	0.005 (0.005)	0.045** (0.018)	0.001 (0.007)	0.004 (0.007)	0.008 (0.010)
Education: tertiary	0.013*** (0.005)	0.068*** (0.018)	0.010 (0.008)	0.016** (0.007)	-0.003 (0.009)
Age	-0.000** (0.000)	-0.001** (0.000)	-0.000* (0.000)	-0.000* (0.000)	-0.001*** (0.000)
Household size	0.002 (0.002)	0.007 (0.005)	0.005** (0.002)	-0.001 (0.002)	0.001 (0.003)
Log(household income)	-0.001 (0.004)	0.033*** (0.011)	-0.003 (0.005)	0.009* (0.005)	0.019*** (0.005)
Liquidity status	-0.008* (0.005)	0.038** (0.018)	-0.008 (0.008)	-0.013* (0.007)	-0.010 (0.008)
Observations	8,542	8,558	8,542	8,542	8,542
1 <sup>st</sup> -stage F stat	16.14	14.45	16.69	15.95	15.17
Over-id (p-value)	0.746	0.575	0.558	0.698	0.886

Notes: the table reports estimates of specification (2). The dependent variable is an indicator variable equal to one if a household purchased a given type of durable/luxury good/service over the month prior to December 2020 wave. The first stage is given by specification (1). All regressions use sampling weights. Heteroskedasticity robust standard errors are reported in parentheses. \*\*\*, \*\*, \* denote statistical significance at 1, 5 and 10 percent levels.

Table 4. Effects of perceived adequacy of government support on nondurable consumption and budget shares.

	Non-durable consumption	Food	Housing, utilities, furniture, home equipment	Clothing	Healthcare	Transport	Recreation	Education and other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Posterior: perceived adequacy	0.001 (0.046)	0.025 (0.017)	-0.015 (0.018)	0.013** (0.005)	0.014* (0.007)	0.003 (0.005)	0.008*** (0.003)	0.015* (0.008)
Prior: perceived adequacy	-0.011 (0.026)	-0.014 (0.010)	0.005 (0.010)	-0.005* (0.003)	-0.008* (0.004)	0.001 (0.003)	-0.002 (0.002)	-0.008* (0.005)
Education: secondary	0.008 (0.021)	-0.000 (0.008)	-0.006 (0.009)	0.005* (0.003)	0.005 (0.004)	-0.007** (0.003)	-0.005*** (0.002)	0.004 (0.004)
Education: tertiary	0.060*** (0.021)	-0.014* (0.008)	-0.000 (0.009)	0.004 (0.003)	0.009*** (0.004)	-0.006** (0.003)	0.000 (0.002)	0.009** (0.004)
Age	0.002*** (0.001)	0.001*** (0.000)	-0.001*** (0.000)	-0.000*** (0.000)	0.001*** (0.000)	-0.000* (0.000)	0.000 (0.000)	0.000 (0.000)
Household size	0.081*** (0.006)	0.009*** (0.002)	-0.014*** (0.002)	0.003*** (0.001)	-0.002* (0.001)	0.001* (0.001)	0.000 (0.000)	0.003*** (0.001)
Log(household income)	0.241*** (0.013)	-0.018*** (0.004)	-0.052*** (0.005)	0.006*** (0.002)	0.007*** (0.002)	-0.005*** (0.002)	-0.000 (0.001)	0.010*** (0.002)
Liquidity status	0.022 (0.021)	0.014* (0.007)	-0.028*** (0.009)	0.006*** (0.002)	0.002 (0.003)	0.001 (0.003)	0.004** (0.002)	0.003 (0.004)
Observations	7,493	8,154	8,159	8,154	8,155	8,157	8,152	8,156
1 <sup>st</sup> -stage F stat	12.26	11.53	14.36	13.88	12.86	14.86	15.01	13.76
Over-id (p-value)	0.013	0.803	0.321	0.361	0.040	0.426	0.418	0.926

Notes: Col. (1) reports estimates of specification (3), where the dependent variable is the logarithm of non-durable consumption. Col. (2)-(8) report estimates of specification (4), where the dependent variable is the budget share of spending category  $k$ , measured on the 0-1 scale. The first stage is given by specification (1). All regressions use sampling weights. Heteroskedasticity robust standard errors are reported in parentheses. \*\*\*, \*\*, \* denote statistical significance at 1, 5 and 10 percent levels.

Table 5. Effects of perceived adequacy of government support on expected: household income, access to credit, financial situation and tax burden.

	Expected household income growth	Expected access to credit	Expected financial situation to improve	Expected tax burden
	(1)	(2)	(3)	(4)
Posterior: perceived adequacy	0.654* (0.378)	0.145** (0.074)	0.068** (0.030)	-0.065 (0.058)
Prior: perceived adequacy	-0.269 (0.212)	-0.061 (0.042)	-0.034* (0.017)	0.015 (0.034)
Prior: pre-treatment variable	0.519*** (0.019)	0.434*** (0.027)	0.444*** (0.017)	0.318*** (0.014)
Education: secondary	-0.138 (0.174)	-0.007 (0.037)	0.024 (0.016)	0.031 (0.030)
Education: tertiary	-0.021 (0.170)	-0.007 (0.037)	0.023 (0.016)	0.008 (0.030)
Age	-0.018*** (0.004)	-0.001 (0.001)	-0.002*** (0.000)	0.001** (0.001)
Household size	-0.026 (0.045)	-0.028*** (0.009)	-0.007 (0.004)	0.011 (0.007)
Log(household income)	0.083 (0.104)	0.146*** (0.020)	0.001 (0.009)	0.027* (0.016)
Liquidity status	0.015 (0.168)	0.101*** (0.032)	-0.011 (0.015)	0.070** (0.029)
Observations	7,552	7,912	8,554	8,437
1 <sup>st</sup> -stage F stat	17.07	13.03	13.78	14.46
Over-id (p-value)	0.434	0.287	0.091	0.133

Notes: the table reports estimates of specification (5). The dependent variable is the budget share of spending category  $k$ , measured on the 0-1 scale. The first stage is given by specification (1). All regressions use sampling weights. Heteroskedasticity robust standard errors are reported in parentheses. \*\*\*, \*\*, \* denote statistical significance at 1, 5 and 10 percent levels.

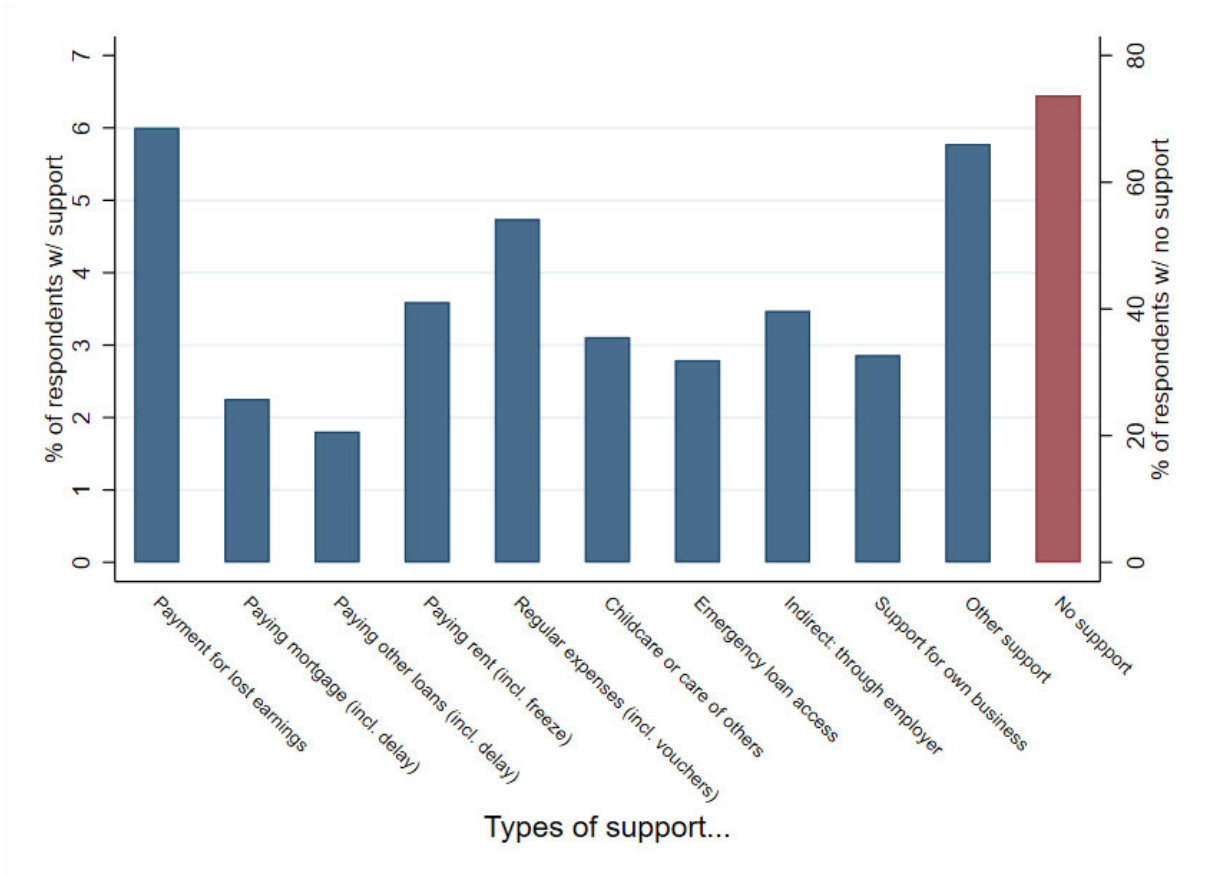


Fig. 1. Actual Government Support Received until December 2020. *Notes:* histogram showing the fraction of respondents (in %) reporting different (non-mutually exclusive) types of government support received until December 2020.

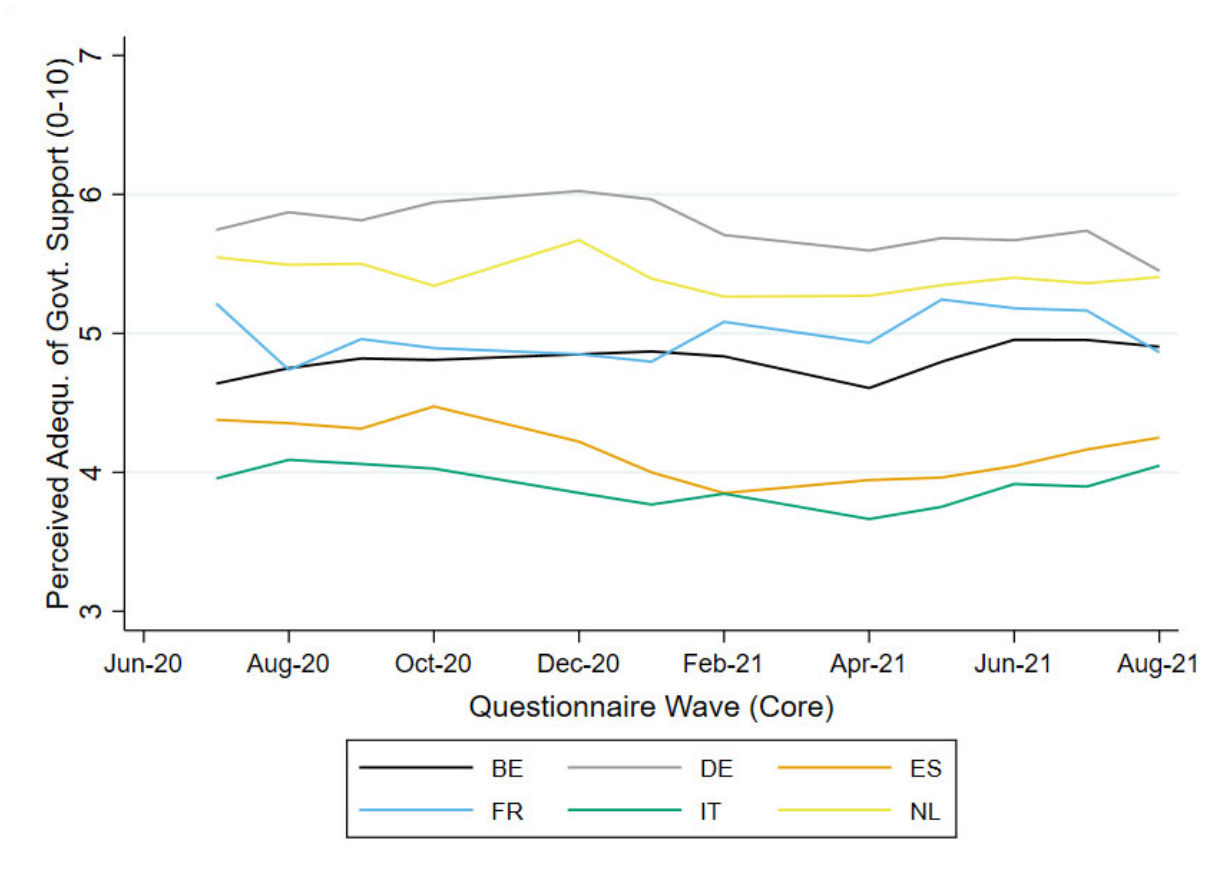


Fig. 2. Mean Perceived Adequacy of Government Support over Time, by Country. *Notes:* line plot showing mean perceived adequacy of government support measured across various CES waves per country.

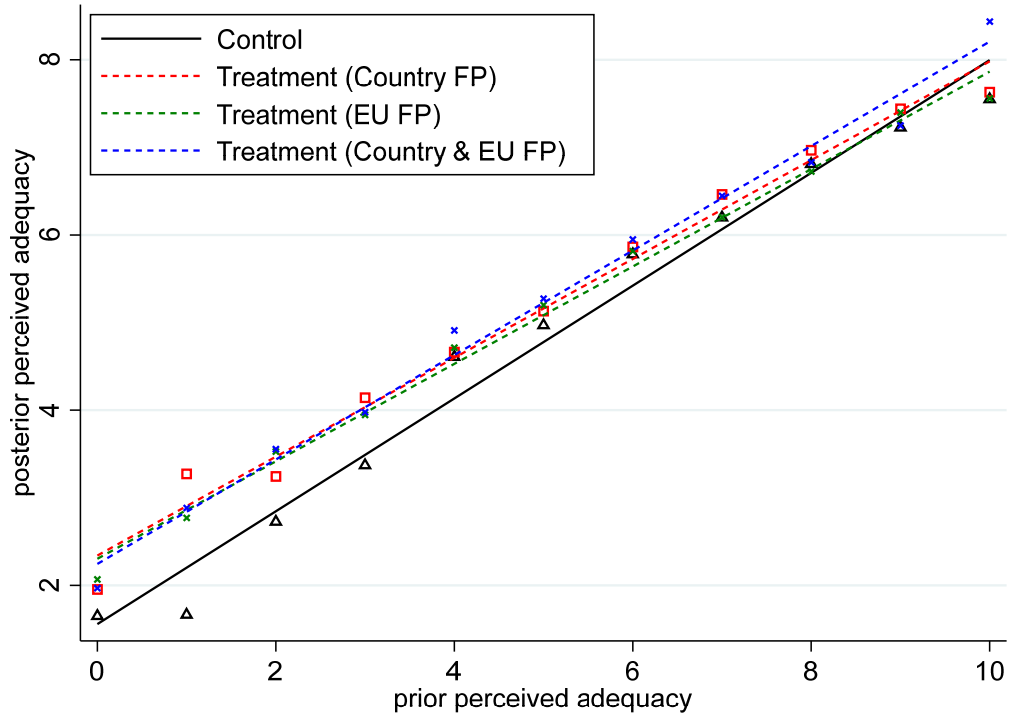


Fig. 3. Prior and Posterior Perceived Adequacy of Government Support. *Notes:* binscatter plot showing revisions in perceived adequacy of government support for the control and treatment groups.