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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 the perceptions 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 also 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

Non-Technical Summary

This 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). Subsequently, to help showcase some of the CES's main features as a powerful tool for research-based policy analysis, the paper investigates how consumers' perceptions about the adequacy of government support measures during the pandemic have had a causal influence on their spending behavior.

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 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 starts by providing a summary overview of the CES's main motivation, its novel features, sample design, topical and country coverage. For example, the CES' mixed-frequency modular structure ensures a broad topical coverage of household sector issues (consumption, labour markets, inflation, housing and consumer finance and investment) without overburdening respondents in a way that would negatively impact on data quality. Also, the online nature of the survey ensures that questionnaires can be easily adapted to new issues as, for example, have been raised during the global COVID-19 pandemic as well as ensuring that survey results are available in a timely manner for economic policy analysis. Importantly, the CES also collects data centrally for multiple countries in a synchronised and harmonised manner using a dual sampling strategy that includes a substantial probabilistic component which helps to ensure that the results are representative of country populations and are available in a timely manner and 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 second part of the paper uses CES data to investigate whether household perceptions about fiscal support measures introduced during the pandemic have influenced their spending behaviour. This analysis relates to the growing body of empirical literature studying households' knowledge, perceptions and 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 response and communication in response to those needs, provides a very powerful context for such an analysis. To investigate the causal effects of perceptions about the adequacy of government support, we implement a Randomised Controlled Trial (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 stabilisation objectives that are communicated to random subsets of respondents can help improve consumers perception about the adequacy of fiscal interventions relative to the perceptions of an untreated control group. Moreover, such an improvement in consumer beliefs has a strong and persistent positive causal effect on their spending, in particular raising spending on 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, we show how this perceptions channel operates beyond 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 receiving government support.

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 has been developed at 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-facetted 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 heterogenous 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).[1]

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 report that they did 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.

[1] Beyond fiscal interventions, households benefitted from support by highly accommodative monetary and financing conditions enabled by ECB's Pandemic Emergency Purchase Program (PEPP).

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 with different needs and characteristics and which 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 actual government support programs 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. In particular, they mainly give rise to improvements in perceived adequacy for consumers whose prior judgement was that fiscal measures were not adequate. Also, exploiting this exogenous variation in consumer perceptions, we identify a strong causal and quite persistent impact of an increase in the perceived adequacy of fiscal support on actual household spending, especially as regards large items of a discretionary nature. This evidence is consistent with triggering spending among households that had postponed it during the months of the COVID-19 outbreak prior to the fielding

of our RCT and/ or bringing forward spending among those who had planned to spend more in the post-pandemic period.

Our findings may reflect a number of different channels at work. For example, in view of an effective fiscal intervention, households are likely to expect that their own income prospects will be little affected in response to the COVID-19 crisis or even improved. Moreover, households should anticipate that future economic conditions will facilitate access to credit or form a more positive outlook about their country's economic recovery and prospects. More generally, a government intervention that is seen as adequate should provide sufficient public insurance and a safety net against the COVID-19 shock. As a result, households are likely to exhibit less precautionary behaviour and engage in more spending. On the other hand, information about government support packages may impact household expectations about future taxation and thereby discourage spending through Ricardian channels.

Using prior and post-treatment expectations data from the CES 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 influencing 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 report that they 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 with resulting implications for overall policy effectiveness. As discussed in Stantcheva (2020), examples include public perceptions about inequality and social mobility, tax, trade and health-care policies. Coibion et al. (2020) examine the effects of information about the fiscal outlook on US households' inflation expectations. In general, much of this literature has highlighted certain limitations in the publics' knowledge about economic policies and the economic mechanisms on which they are assumed to rely. In particular, the level of the public's knowledge is typically much lower than is often assumed by economists (see, e.g., Sapienza and Zingales, 2014) 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.[2] 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

[2] Coibion et al. (2019) 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.

held view that expansionary fiscal interventions can boost consumer and business confidence, which in turn can trigger private spending and investment.[3]

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. (2020) 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 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., Lalinski and Pal, 2020) or by being sufficiently well targeted to avoid an excessive level of support or 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 that captures also its more medium-term consequences.

[3] Carroll et al. (1994) and Ludvingson (2004) have emphasized the role of consumer confidence in predicting household spending. Konstantinou and Tagkalakis (2004) 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.

The layout of the remained of the paper is as follows. Section 2 presents the overview of the Consumer Expectations Survey highlighting in particular its broad topical coverage, high statistical quality as well as its 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. An Appendix provides some additional more detailed information about the CES and the econometric analysis of government support measures.

2. Introducing the CES: An overview of key features

In this Section we provide an introductory overview of the CES focussing on its core features including its mixed frequency modular structure, its goal of achieving multi-country population-representative samples, the advantages of its strong panel dimension and the flexibility associated with the online survey mode.

2.1 Mixed-frequency modular structure

The *mixed-frequency* and *modular design* of the CES combines the regular monitoring of household sector developments at a relatively high monthly frequency with lower frequency collection of less time-sensitive data on a quarterly, annual, once-off or on a more ad-hoc basis. This approach helps ensure that the survey can be adapted to respond to a changing economic environment whilst also avoiding overburdening survey participants in a way that would impact negatively on their willingness to respond or the overall quality of their responses. To implement this mixed-frequency surveying strategy, the CES has benefitted from best international practice and from the experience in setting up a number of other similar online surveys. In particular, De

Nederlandsche Bank has a long tradition in conducting its household survey online (see Teppa and Vis (2012)) and the Survey of Consumer Expectations (SCE) run by the Federal Reserve bank of New York (see Armantier et al. (2015) and Armantier et al. (2016)).[4] 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 et al. (2015); Beckmann and Schmidt (2020); Neri and Zanichelli (2020); Rondinelli and Zanichelli (2021)).

The CES employs the modular survey structure as 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.[5] The purpose of this background questionnaire is to capture a range of relatively time-insensitive information about the respondent and their household, including household composition, educational attainment, housing tenure, total net income. In addition, it includes some questions aimed at deriving measures of consumers' overall financial literacy and preferences regarding risk. Financial literacy is measured using a set of three basic questions aimed at assessing financial knowledge (often labelled as 'big 3'; see Lusardi and Mitchell (2014)) plus one more knowledge-intensive question about mortgage borrowing). Regarding risk attitudes, the CES follows a growing literature (see, for example, Dohmen et al. 2011) and asks for respondent preferences when comparing a risky pay-off against several certain alternatives. Table A1 in the Appendix lists all the key concepts measured via the background questionnaire which overall takes

[4] For more details see the SCE webpage: https://www.newyorkfed.org/microeconomics

[5] This recruitment interview also provides some very basic information about respondents' demographic profile and other characteristics while, for those who decline to participate, some information on the underlying reasons is also collected. Respondents who accept to participate in the CES are then asked to complete an initial online background questionnaire which can be accessed by logging into a personalised internet platform.

approximately 10 minutes to complete. The background questionnaire is normally completed soon after the initial recruitment interview. However, it is also possible to repeat this questionnaire to check the stability of specific background characteristics which may change reflecting a change in respondents' individual circumstances and/or major economic or societal developments.

Two other regular modules, the core "Monthly" and "Quarterly" questionnaires, collect more time-varying information on consumer perceptions, expectations and behaviour on a monthly and quarterly frequency, respectively. In addition to qualitative and quantitative information about perceived and expected economic developments, the survey also includes questions that elicit probabilistic information which can help to derive both first and second moments for expected future inflation, household income, consumption expenditures and macroeconomic growth. As discussed in Manski (2004), this probabilistic approach is in line with the growing use of subjective probabilities to better measure economic expectations and explain consumer choices. The approach does not assume any sophisticated knowledge of probability theory and concepts amongst survey respondents but instead simply asks them to assign points to alternative future scenarios based on the perceived likelihood that they will happen.

The Monthly and the Quarterly modules aim for a maximum interview length of about 20 and 10 minutes respectively, although in practice it is often possible for respondents to complete the modules in less time. As a result, respondents should spend less than 30 minutes to complete the regular CES modules in a month where both the monthly and the quarterly questionnaires are fielded (40 minutes in the first month following recruitment and where they also respond to the background questionnaire). Maintaining this overall relatively conservative survey duration is critical to ensuring overall data quality and reliability.

Table A1 summarises the main economic concepts that are covered in each of the CES's regular questionnaire. The monthly module of the CES covers a range of indicators that provide insights on the economic behaviour and expectations of households over time. The core module covers topics related to consumption and savings (e.g., past and expected spending on durables and non-durables), inflation perceptions and expectations (e.g., quantitative growth rate of "prices in general" at short and medium-term horizons), consumer finance (e.g., credit access and liquidity conditions), trust in European institutions including the ECB, labour markets (e.g., expected unemployment rate, working hours) and housing market developments (e.g., house price expectations, perceived attractiveness of housing as an investment). The CES has thus enriched dramatically the detail and timeliness of data related to the euro area household sector. The online platform also facilitates the introduction of topical new questions in the monthly module in a very timely manner (see also the discussion in Section 2.3 below). During the COVID-19 pandemic, this has included information about consumer concerns about the pandemic's impact on their household's financial situation, their access to government support measures and their expectations about access to vaccination and their perceptions about how the pandemic may have impacted inequality (see Table A1). Given the importance of household sector developments for euro area aggregate demand, this has helped to improve euro area business cycle analysis and deepen considerably the understanding of the transmission mechanism from monetary and other economic policies to households (see ECB, 2021). A key aspect in this respect is the granularity of CES data on income and consumption across different demographics, consumer groups and regions which enables a more coherent assessment of the economic and financial heterogeneity across consumers which in turn helps to deliver a better aggregate assessment of economic trends.

The quarterly module is a more detailed online interview with a major focus on consumption patterns and specific consumer expenditures, as well as more detail on labour market and financial activities of households that complements the indicators from the monthly module. The detail of household expenditure and consumption patterns collected in the quarterly is critical for understanding the overall state of household demand and how it is responding to business cycle and other economic shocks. The module provides details on the planned and expected consumption of both durables and other "big ticket" (e.g., cars, housing, holidays and luxury goods) as well as non-durables. For example, households are asked to report their spending 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.

The survey design for this question follows that of the American Life Panel (ALP).[6] That is, after they insert the amounts, respondents see a summary screen displaying spending by category and the implied total monthly spending. Subsequently, respondents can double check and amend the originally provided figures. Total non-durable consumption can then be measured as the sum of the total amount spent on these categories excluding debt payments. In addition to the detailed data on household consumption, the quarterly module also complements the information from the monthly module on labour markets with additional timely and unique information on a wide range of other indicators. These include indicators of a possible change in respondent's

[6] For more details see: https://alpdata rand.org/

employment status, their expected probability of losing or finding a job, the degree to which their job matches with their skills or intensity of job search behaviour. Crucially, the panel component of the CES (discussed further below) allows analysis of how respondents transition from different labour market statuses (e.g., employed to unemployed, employed to retired). Such data is essential to monitor labour supply and the overall level of slack in the economy. Finally the quarterly module also enriches the level of detail related to household financial activities (e.g., past and expected credit applications, payment arrears), recent and planned savings activities (e.g., depositing money in a bank account, or by buying financial assets, property, or other assets) investment-related expectations and uncertainty (expected stock prices and stock price uncertainty).

In its first two years of development, the CES has managed to enrich greatly the quality and breadth of data that is available for euro area household sector research. In the future, it is planned to expand the CES modular structure to include additional topical modules that are fielded on an annual basis. These annual modules will cover topics such as household finance and balance sheets, consumer perceptions and knowledge related to central banking issues and communication as well as additional labour market and housing market topics. In addition, it is planned to introduce additional ad hoc modules on a once-off basis that can shed light on key topical areas of interest (some examples of these ad hoc modules are discussed in Section 2.4 below). This includes the short- and longer-term consequences of the COVID-19 pandemic, household sector adaptation to new technologies, including payment and financial technologies, and digitalisation as well as household perceptions related to the impact of climate change and climate-risk mitigation policies.

2.2 Multi-country population-representative samples

Given its intended use for scientific research and monetary policy analysis the CES aims at providing population representative aggregate data for the euro area household sector. 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 Table A2). The four larger countries each deliver samples of approximately 2000 responses every month while data from 1,000 respondents are collected in The Netherlands and Belgium. Going forward it is intended to further expand both CES's country coverage and the overall sample size. Toward this end, the development phase of CES will also see the addition of several new euro area countries and the further expansion of the CES sample size. This expansion of sample size should enable a richer and more robust analysis of specific groups and thus help to shed better light on the important dimensions of household sector heterogeneity. While such analysis of differential behaviour across various demographic and socio-economic groups is of interest in its own right, it is now increasingly recognised in macroeconomics that a reliable account of aggregate dynamics and long-run trends needs to appropriately incorporate relevant forms of heterogeneity. A good example of this is the aggregate implications of rising income and wealth inequality and their implications for monetary policy. For example, Auclert (2019) has recently argued that redistribution is an important *channel* through which monetary policy affects macroeconomic aggregates, because those who gain from accommodative monetary policy have higher Marginal Propensities to Consume than those who lose. Below, we discussed further how the online nature of the CES is well suited to measure MPCs that are consumer-specific in response to changes in income and wealth.

The CES targets being representative of the adult population aged 18 years and above that is residing in each of the participating countries and aims at a sample that is representative by age, gender and region. As the survey is conducted online, and panel members must complete the online background questionnaire, the recruitment process effectively filters out respondents who do not use or have access to the internet. A unique and distinguishing feature of the CES is to combine two separate sampling methodologies. A considerable fraction of the CES sample (close to 75% in the four largest euro area countries) represents directly recruited respondents who are *randomly selected* from the population using a process of Random Digit Dialling (RDD).[7] The virtue of this random or probabilistic sampling approach is that such methods can in principle help to recruit any member of the population who can be contacted by phone. This is considered an optimal strategy that avoids the introduction of sampling biases in survey results. The remaining respondents are then recruited from existing non-random samples of consumers who have agreed to participate in online surveys. Such non-probability samples are maintained by survey research companies for social, economic and other market research. While these samples can provide data on a very cost-effective basis, they may also be a source of bias and response error in survey results. For example, some studies have highlighted an increased incidence of mis-reporting from such panel participants, or that they give multiple non sequitur or inconsistent responses to open-ended answers; or they always give the same response (e.g., said they "agree") regardless of what was asked.[8] The CES non-probability component of the sample provides a very cost-effective way

[7] The adopted RDD strategy generates telephone numbers at random and makes use of both fixed and mobile sampling frames. This ensures that the sample covers a large majority of the population in each country and takes into account the overlap between mobile and fixed line ownership. In defining the share of the mobile sample, all potential respondents that can be reached via a mobile line are included (regardless of whether they can also be reached via a fixed line).

[8] See, for example, MacInnis et al. (2018) and PEW Research Centre (2020). MacInnis et al. (2018) find that probability samples interviewed by telephone or the internet were the most accurate and least accurate were internet surveys of opt-in panel samples.

to collect data and thus improve sample size though it has the disadvantage that it is much harder to assess how population representative are the survey responses. By combining the two approaches, the CES gives a very high weight to the advantages of probability sampling whilst also gaining some of the advantages of NPS in terms of cost effectiveness and increased sample size.

Experience with this dual sampling approach demonstrates considerable success in tracking many key aspects of the euro area economies. For example the sample shares related to gender, employment status, household size housing tenure status and the regional distribution of respondents all match very closely those that can be obtained from external benchmarks (e.g., official population registers, the EU-SILC dataset). One finding observed in the data is that older and less well-educated consumers are less represented in the CES than would be desirable and efforts are underway to make the survey more accessible to these two groups. However, to help correct for these differences a set of survey weights are also available to adjust the raw CES results ex post to account for this lower level of sample representation. The construction of these survey weights, which are applied to both the randomly and the non-randomly selected participants, is described in more detail in ECB (2021) and the weights are made available together with the actual survey replies for use in analysis and reporting.

The multi-country nature of the CES is a particularly distinguishing feature as many household surveys are conducted on a single-country basis only. This single-country approach has impeded comparative analysis of household sector issues across individual countries because different surveys often cover different topics or questions are phrased in a way that limits the cross-country comparability of survey responses. The CES is designed to ask a common set of questions across countries and over time. In the pilot, the survey has targeted the six largest euro area

countries, thereby also providing insights for the euro area[9]. The questionnaires, designed in English, are carefully translated into each of the national languages in these countries thereby helping to ensure high quality and comparable responses that can also be aggregated. Translations of the English questionnaires into national languages have been undertaken by the ECB's own language services. ECB translators are mother-tongue speakers and so are very well placed to produce translations that take account of the cultural specificities of their particular country and/or language community. In addition to providing comparable, harmonised and synchronised cross-country samples, the availability of a within-country regional breakdown strengthens even further the research potential of the dataset. The CES data is available at the NUTS1 level of disaggregation and can be linked to various regional indicators for research and policy analysis.

2.3 Panel dimension

Another 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 and measure changes in household perceptions and expectations. 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 contribution of unobserved, time-invariant, consumer heterogeneity that could otherwise distort the identification of key parameters or relationships of interest.

[9] The ECB's Language Services team have provided very valuable assistance in translating the English language versions of the questionnaires into the respective national languages in which the survey is run, supported also by very useful feedback on the questionnaires by staff at Eurosystem NCBs.

Experience with the CES to date has demonstrated that it is possible to ensure the retention of survey respondents over time. By looking at the sample of respondents over the period April 2020 to April 2021 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. This strong panel component is critical for economic analysis. In particular, the inclusion of repeat respondents allows tracing the formation of consumer expectations and their revision over time, and the extent to which such revisions feed into important household decisions. One important feature of the CES that is considered critical to the maintenance of this strong panel component is the use of survey incentives.[10] The CES is an incentivized survey with respondents receiving a gratuity with a relatively modest monetary value in recognition for their participation. In particular, over a 12-month period of participation a randomly recruited respondent could earn approximately EUR 120 in vouchers that they can exchange for the purchase of goods and services. These incentives serve to signal the important value of the data supplied by respondents and strengthen the CES's overall quality by promoting high overall survey response rates, strong panel retention and minimal skipping by participants of individual questions. This is demonstrated by the very high question response rates across both the background and the regular monthly and quarterly modules (see Table A2 in the Appendix). Another important survey design feature that helps to encourage repeat participation is to aim to ensure that respondents are not intimidated by too many complex economic concepts. For this reason the questionnaires aim to use phrasing and terminology that can be widely understood. Moreover, the online platform, means that it is possible to add short explainers for more complex economic terminology that can help guide participants through the

[10] Singer (2018) gives an overview of the evidence supporting the use of incentives in survey-based research, while Zagorsky and Rhoton (2008) document the increase in response rates in panel surveys.

survey. To help monitor this aspect after completing each survey module respondents are requested to assess the perceived difficult of the questionnaire. Despite the broad focus on many complex and challenging economic concepts, it has been possible to keep the perceived difficulty of the CES at very acceptable levels. For example, 55.8% of respondents assess the survey to be "not at all difficult" while only 2.1% judge the CES to be "very difficult".

While the tracking of a panel of repeat respondents through time strengthens greatly the CES's value, it is nonetheless also important to ensure that the CES panel is refreshed with new respondents in a relatively smooth manner. There is some evidence that survey participants learn over time and that their survey responses can become anchored or impacted by the information that they receive through participation in the survey. Recent research on survey methods has helped to better understand the way in which panel participation can impact survey responses (Halpern-Manners and Warren, 2012) and studied (Bach and Eckman, 2018) the causal effects of respondents' panel participation on reported labour market activities and behaviour. To help limit the impact of such conditioning effects on the quality of CES data over time, after between 12-18 months participation, panel members normally exit the CES panel and are then replaced by new members. This refreshment of the CES sample helps ensure that survey results are not biased by overweighting respondents who have become overfamiliar with the CES survey and that the results also reflect the views of newly recruited consumers who are less familiar with the questionnaires. This gradual refreshment of the sample is assisted also be a steady process of panel attrition where respondents exit the panel of their own accord. As a result, to maintain the overall target sample size, new sample recruits are included in every survey round. On average though this process can be managed in a very smooth manner with, for example, 9.6 % of the sample taking the survey for the first time in any given month over the period April 2020 -April 2021.

2.4 Flexibility of the online survey mode

The CES is primarily conducted *online* where survey respondents are provided with access to an internet platform where they can submit their individual and anonymised responses. Online surveys have grown in popularity in recent years as households have increased their access to the internet and advances in survey-based research have enabled the collection of rich quantitative information on households' economic perceptions, expectations and behaviour. Also, reflecting the growing access to the internet, which implies that online surveys can increasing target population-representative samples, several other central banks now conduct consumer surveys online for use in their economic policy analysis and research. Compared with more traditional surveys, like telephone or face to-face interviewing, the use of an online survey platform offers a higher degree of flexibility in questionnaire design by enabling a richer presentation of individual questions and a more active management of the topics included in the questionnaire. In the case of the CES preliminary interim data for a given survey round can be made available virtually in real time within the same survey month while final data can normally be made available about one week after the closing data for the completion of respondents questionnaires. The use of the internet also facilitates the collection of paradata related to respondents survey experience. This can include information on the date and time of the interview or whether the respondents "broke-off" during the survey or measures of how long respondents take when responding to particular question or the device used (a computer, a tablet or a mobile phone). Currently most of the CES respondents (57.7%) are using a laptop computer or a notebook though an important share of respondents (34.4%) use their mobile phone (see Table A2). While the CES platform and question design is visually optimised for larger screens, it also accommodates the use of smart phone technology by respondents.

The CES's online nature is also particularly important in allowing the questionnaires' respond to evolving economic developments. In addition to the regular survey topics reviewed above, it is also possible to include additional topical questions in the CES questionnaires to help shed light on the evolving economic situation. This facility proved especially useful during the 2020-2021 global pandemic. During this period, it was possible to use the CES modules to explore a number of topics such as the impact of COVID-19 on households' financial situation, the access of households to direct and indirect sources of government financial support and vaccines as well as the impact of the pandemic on consumption, household wealth, accumulated savings and inequality. Using the scope to introduce such flexible ad hoc questions, Christelis et al. (2020) study the causal effects of the COVID-19 pandemic on household consumption. Their empirical strategy exploits household-specific information on the perceived severity of the financial consequences of the COVID-19 shock that can be used to provide direct evidence on a household-specific channel through which the pandemic impacts consumption. Moreover, it is shown that the effects of COVID-19 outbreak on consumption mainly operate through households' perceptions about the financial repercussions of the shock and not via their concerns about the effects of the pandemic on their own health per se.

Another example of the flexibility embodied in the online CES platform relates to the use of hypothetical scenarios. More specifically, respondents can be presented with more sophisticated questions and hypothetical scenarios that are less easily asked by phone or in a face to face interviews. For example, in a recent study using the CES, Christelis et al. (2020) exploit a hypothetical scenario related to a positive income shock in order to explore the potential impact of income shocks associated with government interventions to limit the consequences of the COVID-19 pandemic. The question used is the following: "*Imagine you unexpectedly receive a one-time*

net payment of €3,000 from the government today. How would you use this unexpected extra income transfer over the next 12 months? Please allocate the €3,000 over the following four categories: 1) Buy goods and services that don't last for a long time (e.g., food, clothes, cosmetics, travel, holidays, entertainment, etc.), 2) Buy long-lasting goods and services (e.g., a car, home improvement, furniture, electronics, etc.) 3) Save, 4) Repay debt".[11] When fielding such questions, an additional advantage of the online platform is that respondents can also be presented with a running on screen total of their responses in EURO for each of the four categories and they can be reminded that the total should sum to EUR 3,000. This helps ensure consistency of responses (here that the amounts sum to the hypothetical endowment) and allow for possible revisions. Moreover, the flexible survey design allows asking the same respondents a counterpart question on a negative shock and use shocks of different underlying amounts. The collected information allows deducing such household level MPCs out of shocks of different sign and size.

The flexibility associated with the online survey model also helps facilitate the fielding of Ad Hoc or Topical Modules aimed at shedding light on a specific policy issue or question. Such Ad hoc or Topical Modules complement the standardised information that is collected via the monthly and quarterly modules. A good example of such an ad hoc module was a set of questions aimed at gauging the response of household sector consumption and investment to the elevated uncertainty about the future evolution of the macroeconomy in 2020. This module which is described in detail in Coibion et al. (2021) took the form of a Randomised Controlled Trial (RCT)

[11] This approach builds on several recent papers that utilize scenarios that involve both positive and negative income shocks that also vary by size (Christelis et al., 2019; Fuster et al., 2017; Bunn et al., 2018; Jappelli and Pistaferri, 2020).

that was fielded in September 2020.[12] In this RCT, CES respondents were assigned to randomly selected groups each of which received different information about the macroeconomic outlook and its surrounding uncertainty, including information about the exceptionally high level of forecaster disagreement about the future growth rate of euro area GDP. Another randomly selected group received no information and served as a control group against which each of the groups receiving the different information treatments could be compared. The results highlighted a quantitatively important impact of macroeconomic uncertainty on individual consumer expenditure with the effects being most pronounced for those respondents working in sectors most exposed to the pandemic. In addition, macroeconomic uncertainty is shown to induce a shift away from some risky assets, though notably, not for housing investments.

3. Government Support and Household Spending: 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 in supporting 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

As also discussed in the Introduction, the nature of the pandemic shock implied that the needs of households for (direct or indirect) government support are likely to have varied widely across individual consumers depending on their country of residence, sector of employment, the

[12] RCT methods have increasingly been used in economics as part of a broader effort to understand the process behind both households' and firms' expectations formation and its macroeconomic implications (see for example, Armantier et al. (2016), Coibion, Gorodnichenko and Kumar (2018) or Coibion et al. (2019) for recent examples).

nature of their employment (e.g., whether it is amendable to remote work), type of employment contract and other demographics as well as over time (e.g., depending on lockdown policies and the roll-out of vaccination programs). Overall, this highly heterogenous 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 supporting 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.[13] 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.

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

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, there is considerable heterogeneity behind this average as perceived adequacy varies both across household groups and for 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, the self-employed and those facing liquidity constraints perceive government interventions to be less adequate. Moreover, a positive association between household income, the expected improvement in own financial situation and the 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 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 the 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 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 effectiveness of 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."*[14]

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 breadth 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 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:

[14] The numbers in euro given for the total package (per person) were based on the existing available estimates at the time the RCT was conducted and 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)

"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. In particular, 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) 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 the 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 Appendix and ECB, 2021). Similarly, Coibion, Gorodnichenko and Weber (2019) 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.

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 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 are likely to have 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, Gorodnichenko and Kumar (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).

First, we give a visual representation of estimating equation (1) by plotting the prior perception about adequacy of government support relative to its posterior (Figure 2). We find that all three treatments induce quite similar revisions to household perceptions about fiscal packages. Intuitively, we find that, 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 estimations to identify the effects of perceived adequacy of government support on household spending.

These treatment effects are useful because they shed light on the formation process of 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 about policies 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 their purpose (targeted at "economic recovery"), can improve public perceptions about the effectiveness of such policies. Moreover, estimated treatment effects are jointly statistically significant providing sufficient exogenous variation to identify the effects of perceptions about policy adequacy on household spending and expectations.

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.[15] 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 the 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 into one). Following Coibion, Gorodnichenko and Weber (2019) and Coibion et al. (2019), 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.

Table 3 shows results for purchases of the various large items, as they were reported in the 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 the 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 the perceived adequacy (measured on a 0 to 10 scale) implies a 4.7 pp higher probability of

[15] 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.

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 (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 the perceived adequacy of fiscal support. As before, we instrument for the set of posterior beliefs using equation (1). Our findings (available from the authors upon request) 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:

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

where $BudgetShare_i^k$ is the share (measured in percent) of the household i budget that is spent on non-durable category k. Results are shown in Table 4. The results point toward two margins along which households that find fiscal interventions more adequate tend to increase somewhat their spending: 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 the 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 possible reasons why consumers may become 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 did or did not actually receive any government support themselves.

3.5 Perceived adequacy of government support and household expectations

In what follows we attempt to shed light on some specific channels through which an increase in public perceptions about the adequacy of fiscal interventions can trigger spending, especially on large durable goods. To this end, we investigate whether the exogenous increase in respondents' perceptions about the government packages during the pandemic have an impact on some of their (post-treatment) expectations. In particular, 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 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 the 10% level).

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.[16] In particular, we model the likelihood of expecting own financial situation to improve (somewhat or a lot) in one year's time 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 of government support implies a 6.8% higher likelihood of expecting household financial situation to improve over the year ahead. Taken together, the above estimated effects of higher perceived adequacy on improved own income prospects, credit access conditions and financial sentiment are consistent with an increase in household spending.

Furthermore, we explore whether perceptions about fiscal interventions influence household expectations about inflation and GDP growth over the next twelve months. We do not

[16] 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.

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 related to one's *own* income and financial situation rather than via improved expectations for the whole economy.

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 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.

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 beyond 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 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 also influence the behaviour of households who did not themselves 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's mixed-frequency modular structure ensures a broad

topical coverage of household sector issues (consumption, labour markets, inflation, housing and consumer finance and investment) without overburdening respondents in a way that would negatively impact on data quality. Also, the online nature of the survey ensures that questionnaires can be easily adapted to new issues as, for example, have been raised during the global COVID-19 pandemic as well as ensuring that survey results are available in a timely manner for economic policy analysis. Importantly, the CES also collects data centrally for multiple countries in a synchronised and 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, 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, 2014 and Blinder and Krueger, 2004) studying households' knowledge, perceptions and 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' response 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 relative to that of an untreated control group. Moreover, such an improvement in consumer beliefs has a strong and persistent positive causal effect on their spending, in particular 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 the adequacy of 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, we show how this perceptions channel operates beyond any direct effects associated with the 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 even if they themselves do not actually receive any government support.

References

Auclert, A. (*2019)* "Monetary Policy and the Redistribution Channel." *American Economic Review,* 109 (6): 2333-67.

Anderson, G., P. Bunn, A. Pugh and A. Uluc (2016), "The Bank of England/NMG Survey of household finances," Fiscal Studies, Vol 37 No. 1, 131-152.

Auclert A. and M. Rognlie (2017) "Heterogeneity and Power Laws in Macroeconomics Aggregate Demand and the Top 1 Percent," *American Economic Review: Papers & Proceedings* 107(5): 588–592

Bach, R. L. and S. Eckmann (2018) Participating in a panel survey changes respondents labour market behaviour, *Journal of the Royal Statistics Society: Series A* (Statistics in Society) 182, *Part* 1, 263–281.

Bachmann, R. and E. Sims (2012) "Confidence and the transmission of government spending shocks," *Journal of Monetary Economics*, 59(3), 235-249.

Beckmann, E. and T. Schmidt (2020). Bundesbank online pilot survey on consumer expectations. Technical Paper Series 01/2020, Deutsche Bundesbank.

Bighelli, T, T Lalinsky and CompNet Data Providers (2021), "COVID-19 government support and productivity: Micro-based cross-country evidence", CompNet Policy Brief No. 14. https://www.comp-net.org/research/vox-eu-columns-policy-briefs/

Blinder, A. S. and A. B. Krueger (2004). What does the public know about economic policy, and how does it know it? NBER Working Paper No. 10787, September.

Bholat, D., Broughton, N., Ter Meer, J. and Walczak, E. (2019), "Enhancing central bank communications using simple and relatable information", *Journal of Monetary Economics*, 108, 1-15.

Bunn, P., J. Le Roux, K. Reinold, P. Surico (2018), "The Consumption Response to Positive and Negative Income Shocks," *Journal of Monetary Economics* 96, 1-15.

Carroll, C. J. Fuhrer, D. Wilcox (1994), "Does consumer sentiment forecast household spending? If so, why?" *American Economic Review*, 85 (5), 1397-1408.

Christelis, D., Georgarakos, D., Jappelli, T. and G. Kenny (2020), "The Covid 19 Crisis and Consumption: Survey Evidence from Six EU Countries", ECB Working Paper no. 2507.

Christelis, D., D. Georgarakos, T. Jappelli, L. Pistaferri, M. van Rooij (2019), "Asymmetric Consumption Effects of Transitory Income Shocks," *The Economic Journal* 129, 2322–2341.

Coibion, O, D. Georgarakos, Y. Gorodnichenko, G. Kenny and M. Weber (2021), "The Effect of Macroeconomic Uncertainty on Household Spending", ECB Working Paper 2557

Coibion, O., Y. Gorodnichenko and M. Weber (2021), "Monetary Policy Communications and their Effects on Household Inflation Expectations," *Journal of Political Economy*, forthcoming.

Coibion, O., Y. Gorodnichenko and M. Weber (2020), "How did U.S. Consumers use their Stimulus Payments?" NBER Working Paper No. 27693.

Coibion, O., Y. Gorodnichenko and M. Weber (2021), "Fiscal Policy and Households' Inflation Expectations: Evidence from a Randomized Control Trial" NBER Working Paper No. 28485.

Coibion, O., D. Georgarakos, Y. Gorodnichenko, and M. van Rooij, 2019. "How Does Consumption Respond to News About Inflation? Field Evidence from a Randomized Control Trial," *American Economic Journal: Macroeconomics*, forthcoming.

Coibion, Olivier, Yuriy Gorodnichenko, and Saten Kumar. 2018. "How Do Firms Form Their Expectations? New Survey Evidence." *American Economic Review*,108 (9): 2671-2713.

Dohmen, T., A. Falk, D. Huffman, U. Sunde, J. Schupp, and G. G. Wagner. "Individual risk attitudes: Measurement, determinants, and behavioral consequences." *Journal of the European Economic Association* 9:3 (2011): 522–550.

ECB (2021), "ECB Consumer Expectations Survey: An Overview and First Evaluation", ECB Occasional Paper No. 287, by K. Bańkowska, Borlescu, A.M, Charalambakis, E., Dias Da Silva, A., Di Laurea, D., Dossche, M., Georgarakos, D., Honkkila, J., Kennedy, N., Kenny, G., Kolndrekaj, A., Meyer, J., Rusinova, D., Teppa, F. and Törmälehto, V., December 2021

Fuster, A., G. Kaplan, B. Zafar (2018), "What Would You Do With $500? Spending Responses to Gains, Losses, News and Loans," NBER Working Paper No. 24386.

Gosselin, M-A., and M. Kahn (2015), "A survey of consumer expectations for Canada," Bank of Canada Review, Autumn, 14-22.

Halpers-Manners, A. and J. R. Warren (2012) Panel conditioning in longitudinal studies: Evidence from labour force items in the current population survey", *Demography* 49(4): 1499-1519.

Jappelli, T., L. Pistaferri (2020), "Reported MPC and Unobserved Heterogeneity," *American Economic Journal: Economic Policy*, 12(4), 275-297.

Konstantinou, P. and Tagkalakis, A. (2011), "Boosting confidence: Is there a role for fiscal policy?" *Economic Modelling*, 28(4), 1629-1641.

Lalinsky, T and R Pal (2021), "Efficiency and effectiveness of the COVID-19 government support: Evidence from firm-level data", EIB Working Paper 2021/06

Ludvigson, S. (2004), "Consumer confidence and consumer spending," *Journal of Economic Perspectives* 18 (2), 29-50.

Lusardi, A. and Mitchell, O. S. (2014), "The economic importance of financial literacy: Theory and evidence," *Journal of Economic Literature* 52(1), 5–44.

Manski, C. F. (2004), "Measuring expectations", *Econometrica,* 72, pp. 1329-76.

MacInnis B., Krosnick J., Ho A.S and Cho M-J (2018), "The Accuracy of Measurements with Probability and Nonprobability Survey Samples: Replication and Extension", *Public Opinion Quarterly*, Vol. 82, No 4, pp. 707-744.

PEW Research Centre (2020). "Assessing the Risks to Online Polls From Bogus Respondents", Research Centre report, 18 February 2020, available here:

https://www.pewresearch.org/methods/2020/02/18/assessing-the-risks-to-online-polls-from-bogus-respondents/

Rondinelli, C. and F. Zanichelli, F. (2021), "The main results of the second edition of the special survey of Italian households in 2020", Banca d'Italia "Covid-19 Notes",

Sapienza P. and Zingales, L. (2013), "Economic experts versus average Americans", *American Economic Review*, 103(3), 636-42

Sahm C.R., Shapiro M.D., Slemrod J. (2010). 'Household response to the 2008 tax rebates: Survey evidence and aggregate implications', in (Brown J.R., ed.), Tax Policy and the Economy, vol. 24, pp. 69–110., Chicago: University of Chicago Press.

Shapiro, M. D., and J. Slemrod, (2003). "Consumer Response to Tax Rebates," *American Economic Review* 93: 381-396.

Singer E. (2018), The use and effects of incentives in Surveys: in Vannette D. and Korosnick J. (*eds*) The Palgrave Handbook of Survey Research, Palgrave Macmillan

Stantcheva, S. (2020), "Understanding economic policies: What do people know and learn?", https://scholar.harvard.edu/files/stantcheva/files/understanding_economics_wp.pdf , Harvard University Working Paper

Zagorsky J. and P. Rhoton (2008) The effect of promised monetary incentives on attrition in long-term panel survey, *Public Opinion Quarterly*, 72(3), 502-513

Table 1: Overview of the CES Modular Structure

	Recruitment Interview	Background Interview	Monthly Questionnaire	Quarterly Questionnaire
Purpose	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
Nature of information collected	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
Duration	5 Minutes (By telephone)	10 Minutes online	20 Minutes online	10 Minutes online
Survey Mode	Telephone	Online	Online	Online
Timing	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***	0.622***
	(0.016)	(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***	0.060	0.047***	0.047***	0.037**
	(0.008)	(0.040)	(0.014)	(0.013)	(0.015)
Prior: perceived adequacy	-0.015***	-0.036	-0.026***	-0.024***	-0.018**
	(0.005)	(0.023)	(0.008)	(0.008)	(0.009)
Plan to buy a given durable	0.110***	0.226***	0.068***	0.040***	0.230***
	(0.022)	(0.014)	(0.012)	(0.007)	(0.026)
Education: secondary	0.005	0.045**	0.001	0.004	0.008
	(0.005)	(0.018)	(0.007)	(0.007)	(0.010)
Education: tertiary	0.013***	0.068***	0.010	0.016**	-0.003
	(0.005)	(0.018)	(0.008)	(0.007)	(0.009)
Age	-0.000**	-0.001**	-0.000*	-0.000*	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Household size	0.002	0.007	0.005**	-0.001	0.001
	(0.002)	(0.005)	(0.002)	(0.002)	(0.003)
Log(household income)	-0.001	0.033***	-0.003	0.009*	0.019***
	(0.004)	(0.011)	(0.005)	(0.005)	(0.005)
Liquidity status	-0.008*	0.038**	-0.008	-0.013*	-0.010
	(0.005)	(0.018)	(0.008)	(0.007)	(0.008)
Observations	8,542	8,558	8,542	8,542	8,542
1st-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 budget shares for nondurable consumption.

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

Notes: the table reports estimates of specification (4). 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*	0.145**	0.068**	-0.065
	(0.378)	(0.074)	(0.030)	(0.058)
Prior: perceived adequacy	-0.269	-0.061	-0.034*	0.015
	(0.212)	(0.042)	(0.017)	(0.034)
Prior: pre-treatment variable	0.519***	0.434***	0.444***	0.318***
	(0.019)	(0.027)	(0.017)	(0.014)
Education: secondary	-0.138	-0.007	0.024	0.031
	(0.174)	(0.037)	(0.016)	(0.030)
Education: tertiary	-0.021	-0.007	0.023	0.008
	(0.170)	(0.037)	(0.016)	(0.030)
Age	-0.018***	-0.001	-0.002***	0.001**
	(0.004)	(0.001)	(0.000)	(0.001)
Household size	-0.026	-0.028***	-0.007	0.011
	(0.045)	(0.009)	(0.004)	(0.007)
Log(household income)	0.083	0.146***	0.001	0.027*
	(0.104)	(0.020)	(0.009)	(0.016)
Liquidity status	0.015	0.101***	-0.011	0.070**
	(0.168)	(0.032)	(0.015)	(0.029)
Observations	7,552	7,912	8,554	8,437
1st-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.

Figure 1

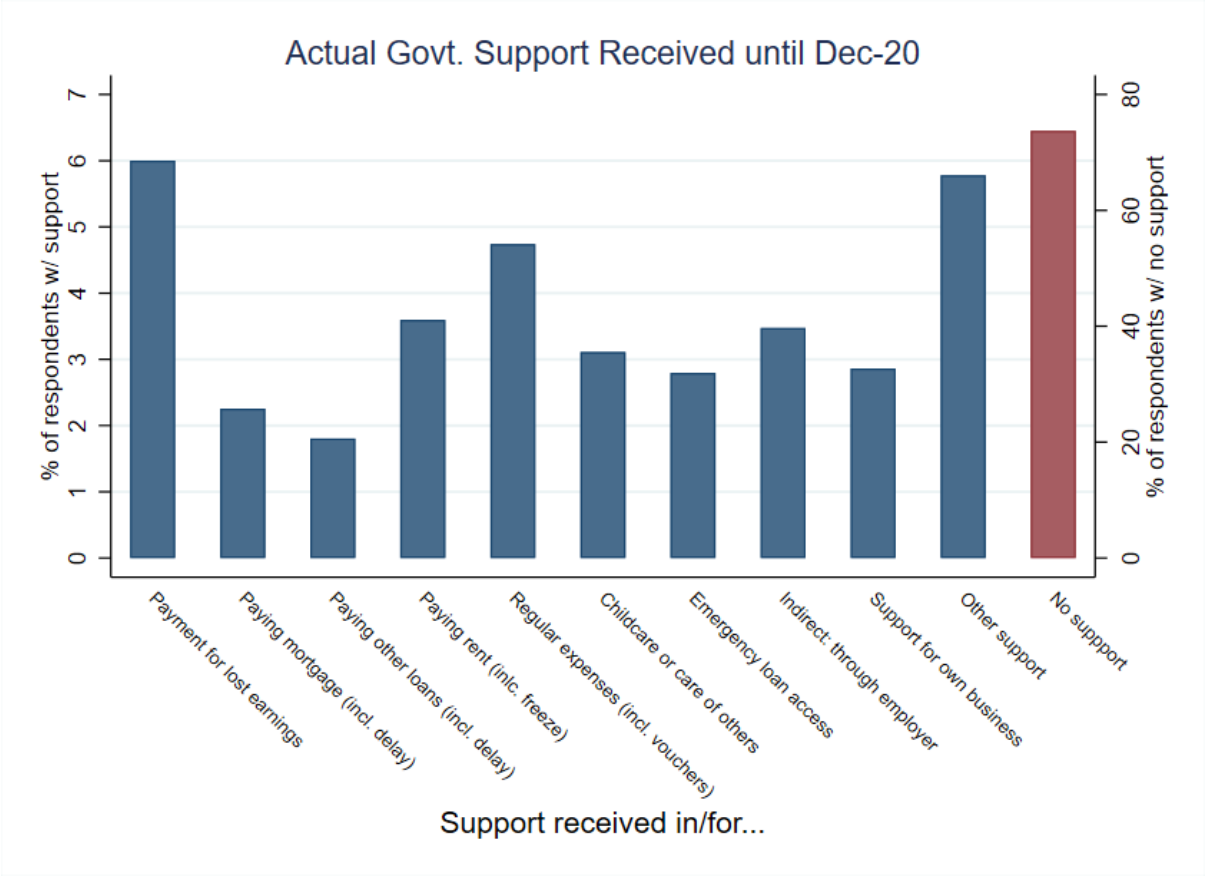
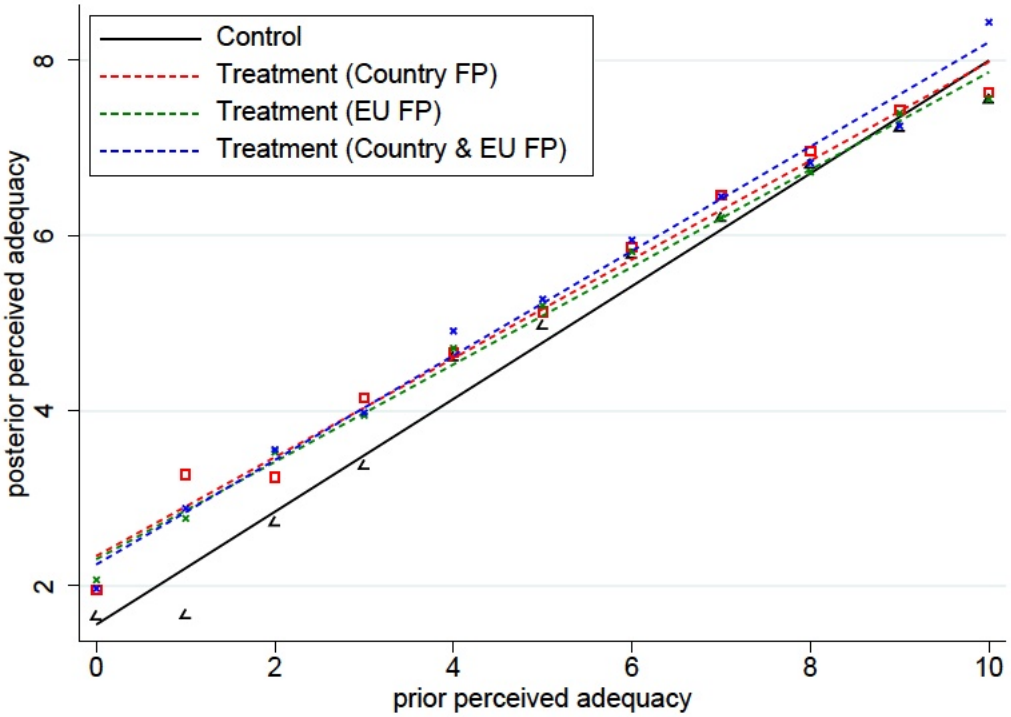

Actual Govt. Support Received until Dec-20
% of respondents w/ support
0
1
2
3
4
5
6
7
% of respondents w/ no support
0
20
40
60
80
Payment for lost earnings
Paying mortgage (incl. delay)
Paying other loans (incl. delay)
Paying rent (inlc. freeze)
Regular expenses (incl. vouchers)
Childcare or care of others
Emergency loan access
Indirect: through employer
Support for own business
Other support
No support
Support received in/for...

Figure 2


Control
Treatment (Country FP)
Treatment (EU FP)
Treatment (Country & EU FP)
posterior perceived adequacy
prior perceived adequacy
0
2
4
6
8
10
2
4
6
8

Appendix

Table A1: Content of Main CES Questionnaires

Recruitment Interview	Background Interview	Monthly Questionnaire	Quarterly Questionnaire
Birth date Gender Country Region Household size	Age Country of birth Household composition Level of educational Employment situation Inactivity situation Housing type Net income Attitudes to risk Financial literacy Trust attitudes	**Regular "Core" questions:** Perceptions about prices in general Expectations about prices in general Uncertainty about expected price developments Past consumption and spending Expected consumption and spending Working hours Households financial situation House price expectations Attractiveness of housing investment Past credit access Sufficient liquidity Expected credit access Trust in EU institutions Other expectations - Unemployment rate - Economic growth - Interest rates **Ad Hoc Questions:** Concerns related to Covid-19 Access to Government support Use of accumulated savings Perceptions about inequality Access to vaccination	**Consumption and savings:** Past expenditure on specific items and services Consumption of durables Consumption of non-durable goods and services Planned expenditures on specific items and services Consumption growth Consumption uncertainty Let of net personal income Future savings intentions Precautionary savings **Labour Markets:** Change in labour market situation Working hours Risk of losing job Job satisfaction Duration of current employment Job search **Consumer Finance:** Past credit applications Outcome of credit applications Expected credit applications Past payment arrears Expected late payments/arrears Expected stock prices Stock market uncertainty

Table A2: Key CES Summary Statistics: April 2020 – April 2021

	Euro Area	DE	ES	FR	IT	NL	BE
Average monthly sample size *(no of respondents)*							
Probability Panel	5,837	1,423	1,475	1,437	1,502	-	-
Online Access	4,332	589	572	594	596	954	1,028
Overall	10,169	2,012	2,047	2,030	2,098	954	1,028
Completion rate *(in % of sample)*							
Probability Panel	96.0	97.4	95.6	95.0	96.0	-	-
Online Access	90.5	93.9	94.6	91.3	95.5	85.8	87.9
Overall	93.6	96.3	95.3	93.9	95.9	85.8	87.9
Median survey duration *(in minutes)*							
Probability Panel	16.1	19.0	14.8	18.7	12.3	-	-
Online Access	9.9	9.3	9.6	9.7	9.4	10.6	10.4
Overall	13.1	16.4	13.1	16.1	11.5	10.6	10.4
Panel participation *(in % of sample)*							
1 round	22.9	23.4	20.2	23.3	13.7	30.0	32.0
2-3 rounds	15.2	13.9	14.8	16.7	12.1	18.6	16.5
4-8 rounds	17.5	20.4	18.0	16.4	15.4	17.4	16.9
more than 8 rounds	44.4	42.3	46.9	43.6	58.7	34.0	34.6
Average share of new entrants to panel *(in % of total sample)*	9.6	10.4	9.7	11.4	6.8	9.6	10.0
Question response rate *(in % of questions with non-response option)*							
Background Questionnaire	96.0	96.1	96.0	96.2	95.2	96.5	96.3
Monthly Questionnaire	94.8	92.9	96.8	85.3	98.7	100.0	100.0
Quarterly Questionnaire	90.3	90.3	91.2	89.9	88.8	92.2	90.3
Device used *(in % of sample)*							
Laptop/Desktop computer	57.7	57.0	47.0	61.4	52.7	67.5	74.0
Tablet	4.2	3.6	4.2	3.8	3.6	6.9	4.3
Smartphone	34.4	36.1	42.3	31.2	39.1	24.4	21.0
Perceived difficulty *(in % of sample)*							
Not at all difficult	55.8	49.4	61.2	39.7	62.5	67.3	58.7
Slightly difficult	31.7	37.2	26.5	38.9	27.2	27.5	31.9
Moderately difficult	10.5	10.4	10.4	17.6	9.1	4.2	8.0
Very difficult	2.1	2.9	1.9	3.8	1.2	0.9	1.4

Notes: Pooled and unweighted April 2020 to April 2021 data. If not specified otherwise numbers refer to the regular monthly module. The total sample size corresponds to the average number of respondents completing the monthly module. The completion rate reports the average share of all respondents completing the monthly module in a given month relative to all respondents who started answering the questionnaire but did not complete all modules in a given month. Median Survey Duration measures the median time (pooled median April 2020 to April 2021) a respondent takes to answer a survey module. The number of modules a respondent participates in (panel component) is referred to as the panel participation rate. The question response rate is the share of questions answered where a non-response option was available. Respondents use different devices to participate in the CES. The share of different devices used is computed as the percentage share of respondents completing the all modules in a given month. At the end of each module respondents are asked to report their perceived difficulty of the module. The responses are averaged across all waves to compute the share in each category.

Table A3. Effects of perceived adequacy of government support on actual purchases of durable/luxury goods and services (two months post-treatment).

	Home	Durable	Car	Holiday	Luxury
	(1)	(2)	(3)	(4)	(5)
Posterior: perceived adequacy	0.037***	0.054	0.042***	0.025***	0.067***
	(0.014)	(0.040)	(0.011)	(0.009)	(0.019)
Prior: perceived adequacy	-0.020***	-0.032	-0.022***	-0.011**	-0.035***
	(0.008)	(0.022)	(0.006)	(0.005)	(0.010)
Plan to buy a given durable	0.456***	0.190***	0.047***	0.022***	0.172***
	(0.030)	(0.013)	(0.010)	(0.005)	(0.024)
Education: secondary	-0.007	0.003	0.006	-0.000	0.003
	(0.006)	(0.018)	(0.005)	(0.006)	(0.009)
Education: tertiary	0.009	0.003	0.010*	0.002	0.012
	(0.006)	(0.018)	(0.005)	(0.006)	(0.009)
Age	-0.000**	-0.000	0.000	-0.001***	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Household size	-0.001	0.001	0.002	-0.001	0.000
	(0.002)	(0.004)	(0.002)	(0.002)	(0.003)
Log(household income)	0.004	0.061***	0.003	0.008*	0.020***
	(0.004)	(0.010)	(0.004)	(0.004)	(0.005)
Liquidity status	-0.004	0.032**	-0.006	-0.007	-0.006
	(0.006)	(0.015)	(0.005)	(0.005)	(0.008)
Observations	8,273	8,289	8,276	8,274	8,277
1st-stage F stat	15.70	15.12	15.20	16.07	15.29
Over-id (p-value)	0.059	0.715	0.644	0.337	0.111

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 January 2021 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 A4. Effects of perceived adequacy of government support on actual purchases of durable/luxury goods and services (three months post-treatment).

	Home	Durable	Car	Holiday	Luxury
	(1)	(2)	(3)	(4)	(5)
Posterior: perceived adequacy	0.025***	0.043	0.048***	0.035**	0.058***
	(0.009)	(0.037)	(0.013)	(0.014)	(0.016)
Prior: perceived adequacy	-0.011**	-0.021	-0.023***	-0.016**	-0.031***
	(0.005)	(0.021)	(0.007)	(0.008)	(0.009)
Plan to buy a given durable	0.093***	0.178***	0.042***	0.030***	0.135***
	(0.019)	(0.013)	(0.010)	(0.007)	(0.022)
Education: secondary	0.006	0.009	0.010	-0.017*	-0.003
	(0.005)	(0.017)	(0.007)	(0.009)	(0.008)
Education: tertiary	0.008*	0.018	0.010	-0.001	0.003
	(0.005)	(0.016)	(0.007)	(0.009)	(0.008)
Age	-0.000**	-0.000	-0.000	-0.001***	-0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Household size	0.001	0.012***	0.001	-0.003	0.003
	(0.002)	(0.004)	(0.002)	(0.002)	(0.002)
Log(household income)	0.004	0.040***	0.006	0.014***	0.008*
	(0.004)	(0.009)	(0.004)	(0.005)	(0.005)
Liquidity status	-0.010**	0.008	-0.005	-0.006	-0.004
	(0.005)	(0.015)	(0.006)	(0.007)	(0.007)
Observations	7,994	8,006	7,991	7,990	7,995
1st-stage F stat	16.85	15.39	15.36	15.15	15.36
Over-id (p-value)	0.0699	0.997	0.669	0.526	0.359

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 February 2021 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 A5. Effects of perceived adequacy of government support on actual purchases of durable/luxury goods and services for households that have not received government support (one month post-treatment).

	Home	Durable	Car	Holiday	Luxury
	(1)	(2)	(3)	(4)	(5)
Posterior: perceived adequacy	0.028***	0.107*	0.046***	0.052***	0.027
	(0.010)	(0.058)	(0.017)	(0.017)	(0.017)
Prior: perceived adequacy	-0.016***	-0.064*	-0.027***	-0.028***	-0.013
	(0.006)	(0.034)	(0.010)	(0.010)	(0.010)
Plan to buy a given durable	0.093***	0.244***	0.059***	0.041***	0.218***
	(0.027)	(0.018)	(0.013)	(0.008)	(0.031)
Education: secondary	0.005	0.043*	0.000	0.003	-0.002
	(0.005)	(0.023)	(0.008)	(0.008)	(0.011)
Education: tertiary	0.011**	0.088***	0.008	0.013	-0.008
	(0.005)	(0.025)	(0.008)	(0.009)	(0.011)
Age	-0.000	-0.001	-0.000	-0.000	-0.001***
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Household size	-0.002	0.004	0.002	-0.003	0.000
	(0.001)	(0.006)	(0.002)	(0.002)	(0.003)
Log(household income)	0.002	0.021	-0.001	0.007	0.018***
	(0.004)	(0.014)	(0.005)	(0.006)	(0.006)
Liquidity status	-0.010*	0.022	-0.016*	-0.015*	-0.002
	(0.006)	(0.028)	(0.009)	(0.009)	(0.009)
Observations	6,317	6,320	6,313	6,312	6,313
1st-stage F stat	8.667	7.526	8.270	8.685	8.333
Over-id (p-value)	0.181	0.992	0.675	0.567	0.896

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 A6. Effects of perceived adequacy of government support on actual purchases of durable/luxury goods and services for households that have received government support (one month post-treatment).

	Home	Durable	Car	Holiday	Luxury
	(1)	(2)	(3)	(4)	(5)
Posterior: perceived adequacy	0.039**	0.001	0.049**	0.039**	0.060**
	(0.015)	(0.055)	(0.024)	(0.020)	(0.030)
Prior: perceived adequacy	-0.017**	-0.002	-0.025*	-0.015	-0.028*
	(0.008)	(0.028)	(0.013)	(0.010)	(0.016)
Plan to buy a given durable	0.116***	0.170***	0.094***	0.035**	0.269***
	(0.035)	(0.024)	(0.027)	(0.016)	(0.047)
Education: secondary	0.004	0.069**	0.002	0.018	0.035*
	(0.013)	(0.033)	(0.019)	(0.016)	(0.021)
Education: tertiary	0.012	0.049	0.005	0.034**	0.002
	(0.012)	(0.030)	(0.018)	(0.016)	(0.017)
Age	-0.001***	-0.002***	-0.001	-0.000	-0.001
	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)
Household size	0.011***	0.011	0.009*	0.002	0.002
	(0.004)	(0.008)	(0.005)	(0.004)	(0.005)
Log(household income)	-0.008	0.046**	-0.001	0.016*	0.025**
	(0.009)	(0.018)	(0.011)	(0.010)	(0.010)
Liquidity status	-0.004	0.041	0.017	-0.009	-0.021
	(0.010)	(0.026)	(0.015)	(0.013)	(0.015)
Observations	2,220	2,233	2,224	2,225	2,224
1st-stage F stat	9.119	8.823	10.93	8.761	7.944
Over-id (p-value)	0.165	0.225	0.177	0.270	0.785

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.

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