# JASB
JOURNAL OF THE ASB SOCIETY

Impact of the Economic Impact Payments on Consumer Spending:
Analysis on a Granular Level of American Counties

Korinek, Otakar[1]*

1 *Gymnázium Nový PORG, Pod Krčským lesem 25, 140 00 Prague 4, Czechia*

About the author

Otakar Korinek is an 18-years-old student attending the class of 2022 at Nový PORGwhere he is enrollerd in the IB Diplima programme and entering his senior/final year. Korinek is a founder of ECONET, an organization that brings together young people passionate about economics and finance and provides them with resources and opportunities to develop their interests further. Korinek participates in academic research at the CERGE-EI institute and its IDEA think-tank. He has co-authored a forthcoming IDEA study about financial support for university students and a paper about sentencing decisions of law students and prosecutors. In his research pursuits, he has analyzed the development of consumer spending in American counties after the COVID-19 outbreak. This work has won Student Professional Activities - SPA (Středoškolská odborná činnost - SOC) competition and was nominated for the Česká hlavička award. He plans to continue his education in economics abroad. After university, he would like to enter academia or the financial industry, focusing on his interest in stock analysis.
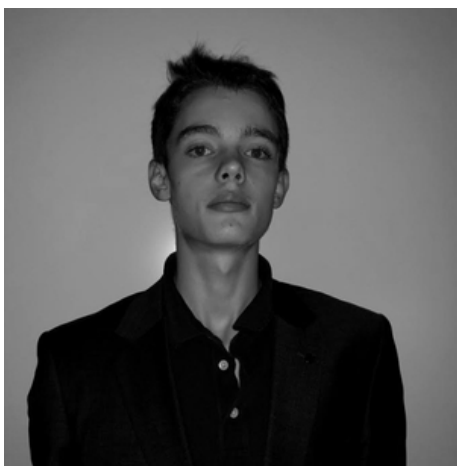
Explanation for general audience

This article studies the effects of Stimulus Checks on consumer spending in American counties. It joins a growing body of economic literature leveraging real-time economic data to analyze policy effects by leveraging high-frequency data of consumer spending on the level of American counties. The article contributes to the literature by thoroughly analyzing Stimulus Checks, using new divisions based on health situation, employment in services, and political preferences. It also disaggregates the difference in effect on consumer spending of top-income and bottom-income groups into two mechanisms: the relative size of checks and different propensity to consume.

The divisions allow us to study the variation in the Stimulus Checks' impact across different subgroups. The article, for example, shows that income-constrained subgroups are most responsive to the policy and that the effect on the spending of groups with low consumer confidence was muted. The article can thus advise policymakers on what subgroups should future one-time payments target.

Finally, the article explores several shortfalls of one-time payments. It explores how its inability to provide sufficient assistance to the most severely hit economic sectors weighs on its overall ability to recover the economy. It also comments on the muted impact the policy has on top-income households with high liquidity. The article then proposes several policies that can address these shortfalls. Overall, the analysis studies the effectiveness of the policy of one-time payments, which is warranted due to their growing popularity and provides guidance on the future use of the policy: when to use it, which groups to target and what policies ought to supplement it.

JASB
JOURNAL OF THE ASB SOCIETY

Impact of the Economic Impact Payments on Consumer Spending:
Analysis on a Granular Level of American Counties

Korinek, Otakar[1]*

1 *Gymnázium Nový PORG, Pod Krčským lesem 25, 140 00 Prague 4, Czechia*
* Corresponding author: korinek@novyporg.cz

 This paper draws on weekly consumer spending data collected by American private companies to analyze the impact of the Economic Impact Payments on consumer spending in American counties. We use regression discontinuity design to quantify the causal effect of the Stimulus Checks on spending and use heterogeneity in economic and demographic factors to determine which groups of counties increased their spending the most, to see what factors affected the Stimulus Checks' effectiveness. We then use the observed difference in impact across groups of counties to discuss whether the Stimulus Checks were the optimal governmental policy in the crisis and discuss the effectiveness of one-time transfer payments in future recessions.

1   Introduction

The COVID-19 outbreak had a devastating impact on the world economy. In early 2021, the United States was the most heavily impacted country, counted both by the number of deaths and infected. The economic impacts were likewise enormous. To combat the pandemic-induced recession, the U.S. government introduced the Economic Impact Payments (henceforth referred to as Stimulus Checks), which distributed one-time payments to most U.S. households. This article studies how the Stimulus Checks impacted American consumer spending.

The payments were a part of the CARES Act, passed and enacted on March 27th, 2020, in the 12th calendar week of 2020. The Act authorized stimulus payments (EIP) to U.S. taxpayers of up to $1200 per individual ($2400 for married couples) and up to $500 for qualified dependents (Pub. L. 116-136) (116th Congress, 2020). The checks were distributed to most American households. To be eligible, the person had to file taxes in 2019 and needed to have income below $99 000 ($200 000 for married couples). The full amount was given to individuals with income under $75 000 ($150 000 for married couples). The amount was gradually reduced by $5 for every $100 of income above the threshold. The checks were sent directly to the recipients' bank accounts. Their distribution began on April 24th, the 17th calendar week. By the end of May, more than 70 % of the eligible residents received the checks [1, 2].

This article analyzes whether the checks fulfilled their purpose: to stop the drop in consumer spending and help restore it to pre-pandemic levels. Secondly, the article evaluates its efficiency and the viability of using one-time payments in future recessions.

The checks' success is largely given by whether they restored the demand of the groups that cut their spending the most. That depends on the extent to which these consumers either spent them or saved them. In the ideal case, the checks would be spent entirely, and their impact would be multiplied by a mechanism, not unlike the Keynesian multiplier [3]. However, the literature shows that consumers used a large portion of their checks to pay down debts and increase savings [4, 5].

We perform a brief analysis of the initial drop in spending which allows us to see which groups cut their spending the most. The analysis shows the spending drop was most pronounced in rich counties who cut their spending more in both relative and absolute terms. That is consistent with the findings of Chetty et al. (2020) who show that the top-income quartile households' spending reduction accounted for 39 % of the aggregate spending decline [6]. That means that to boost aggregate demand,

the Stimulus Checks needed to primarily boost the consumption of the top income households.

Surprisingly, the political preferences of the counties' citizens were an even more powerful predictor of the spending reduction, suggesting the decrease in spending was driven, to a large extent, by the risk perception of the pandemic. Contrary to intuition, the difference in the spending reduction based on the health situation was only minor and that based on employment in services was statistically insignificant.

The analysis shows the treatment effect of checks to be around ten percentage points. We also see the stop in the drop in consumer spending coincides with the CARES Act's signature.

The analysis on counties' characteristics then shows that the impact of checks on spending in top-income counties was muted compared to low-income counties. Significantly, our analysis adjusted for the recipients' income suggests the difference cannot be explained solely by the bigger size of the checks relative to income. We argue the remaining difference is due to lower MPC, as suggested by Baker et al. (2020) and Karger and Rajan (2020), who show that consumers' wealth and liquidity markedly affected how they used their checks [3, 7]. These findings have important policy implications due to the necessity of raising wealthy households' spending to recover the economy.

Division by political preferences shows that Republican counties increased their spending more than Democratic. The main reason likely was a different level of consumer confidence, as the literature shows Democrats considered the pandemic more dangerous, both economically and epidemiologically [8–10]. Consequently, Democrats saved a larger portion of the checks, even though their spending reduction was more pronounced. This finding demonstrates how low consumer confidence levels can hamper the one-time payments' ability to reinvigorate the economy.

Next, we demonstrate the spending increase was more minor in counties with higher employment in services. The employment in services serves as an imperfect proxy of the economic damage caused by the pandemic, since both the literature and national accounts document the services sector faced the largest drop in demand and consequently the highest levels of unemployment [11, 12]. We explain the smaller spending increase in counties more dependent on services by lower consumer confidence, driven by the worse economic situation in those counties, and altered spending habits. The spending habits were affected both by lockdown measures and voluntary reduction in the consumption of services due to health considerations.

We discuss the inability of one-time payments to provide adequate relief to the hardest-hit sectors. Referencing the three-sector model developed by Baker et al. (2020) and the so-called broken Keynesian cross alluded to in Guerrieri et al. (2020), we show how this inability hampers the payments' overall potency by limiting the multiplier effect, since the excess spending does not flow to the economic agents with the highest MPC [13].

Lastly, we divide the counties based on their new case rate at the time of the check's distribution to see if the health situation in the county affected the checks' ability to increase depressed demand. Though a higher case rate correlated with a lower spending increase, the difference was smaller than based on other county characteristics, which suggests the citizens' perception of the pandemic's risk might be more important for economic recovery than the actual health situation. That slightly upends the prevailing literature consensus that economic recovery necessitates first addressing the health situation (e.g., Allen et al. 2020 and Romer 2020) [9, 14].

Across all divisions, we observe the groups with lower consumer confidence increasing their spending less, even though their spending was relatively more depressed compared to January levels. The analysis thus demonstrates how depressed consumer confidence severely crimps the potency of one-time payments.

Altogether, we conclude that the checks fulfilled their stated purpose and were the right policy due to the situation's urgency. However, it seems that the same aggregate demand boost would be possible with lower expenses, should the government target fewer high-income households that used the checks to increase their savings. The muted increase in spending by groups with lower consumer confidence and higher-income households also shows that checks cannot recover the economy on their own. Complete recovery of consumer spending necessitates restoring consumer confidence, as the reduction in spending has been mostly voluntary and driven by a decrease in consumer confidence [15, 16].

For these reasons, we think the use of one-time payments in future recessions is warranted, for their potency to increase spending of low-income households. However, the payments' eligibility cut-off should be more stringent, as proposed by Rachidi (2020) [17]. Furthermore, one-time payments are not a panacea and must be supplemented by other policies. In the next recessions, we recommend that policies designed to assist the most severely affected economic sectors and workers receive a proportionally greater share of resources than they did during the COVID-19 recession. Crucially, policymakers should strive to restore the demand of wealthy households. It is, however, nigh impossible to say what policies are capable of that.

2   Data and Methods

The paper uses data from 1774 American counties. We use their demographic characteristics, such as median household income, the share of votes received by Hillary Clinton and Donald Trump, and track their case rates.

2.1 Data Used

Consumer Spending To construct indices of consumer spending in the counties, the article uses anonymized data from private companies provided by the Opportunity Insights initiative. The initiative used data from two private companies: Affinity Solutions and Coin Out. The consumer spending is indexed, with the January 2020 spending levels serving as a value of 100 [4].

Election Results We use data from MIT Labs to divide counties based on the winner of the 2016 Presidential Elections. This dataset also contains the percent of votes received by the candidates [18].

Case Rate The data about the COVID case rates in counties come from Coronavirus Resource Center at Johns Hopkins University. We refer to the seven days daily moving average case rate as NewCaseRate07DA. The total case rate is referred to as CaseRate [19].

Demographic Characteristics We source the demographic characteristics of individual counties, namely the median household income, employment of workers in services, from the Annual Social and Economic Supplement, a part of the Current Population Survey from 2019 [20].

2.2 Methods Used

Outcome Variables The article primarily uses the *SpendAll* variable to track consumer spending.

SpendAll measures the value of average consumer spending in the county each week, indexed on the average value of spending between 4th and 31st January. We use *SpendAll* to construct another variable: *CumulativeDrop*. We measure the average difference between *SpendAll* in a county in the period between and including the 11th and 15th calendar weeks and their base, January value.

$$CumulativeDrop_i = \overline{(SpendAll_i)}_t - 100 \qquad (1)$$

CumulativeDrop thus shows how did the level of spending in the county differ from its January levels. We use CumulativeDrop to help us understand how the initial drop differed based on the demographic characteristics.

Regression Design We conduct the analysis of Stimulus Checks effect using the Regression Discontinuity design. It is a quasi-experimental approach that allows us to identify the causal effect of checks' on spending. We use a sharp cut-off in the week that Stimulus Checks were beginning to be distributed and conduct the analysis using three different bandwidths of 5, 7, and 9 weeks to increase its robustness. These periods are sometimes referred to as 2Weeks, 3Weeks and 4Weeks, respectively, indicating the number of included weeks after the check's distribution. Formally, the analysis is conducted using the design described in Equation 2.:

$$
\begin{aligned}
OutcomeVariable_{it} = \alpha + \sum_{q=0,1} \beta_1^q (StimulusPayments) \cdot 1\,[ReceivedPayments = q] + \\
+ \beta_2^1 (WeekAfterSimulusPayments)_t \\
+ \beta_2^2 (WeekAfterSimulusPayments)_t \cdot 1\,[ReceivedPayments = q] + \epsilon,
\end{aligned}
\qquad (2)
$$

where the *ReceivedPayments* = 1 when the time variable *WeekAfterStimulusPayments* ≥ 0. β_1 thus denotes the discontinuity coefficient (the casual effect of checks on spending). β_2 then shows the change in time. There are two β_2 coefficients. The first, β_2^1, is used to calculate the change in the outcome variable in time for both the period before and after *WeekAfterStimulusPayments* ≥ 0. β_2^2 then changes the modeled value of the outcome variable only for the period after checks were beginning to be distributed. The change in time after checks were beginning to be distributed is thus given as the sum of the two β_2 values. A negative β_2^2 for *SpendAll* would show that after applying the discontinuous jump at *WeekAfterStimulusPayments* ≥ 0 given by β_1, the spending levels began to decline.

The sum of the coefficients for *SpendAll* gives the modelled level of spending, indexed on January 2020 levels. If the sum of coefficients is greater in week t than in week $t-1$, it merely means spending has increased, but not if faster or slower than last week (whether spending is increasing in time or not is, again, given by the sum of $\beta_2^1 + \beta_2^2$; β_1 only shows whether spending rose discontinu-

ously in the week that checks were beginning to be distributed).

The regression is performed separately for different groups to see how the effects differed based on the counties' income, political preferences, employment in services or health situation.

To control for the difference in the checks' relative size for different income groups, we compute the size of checks as a percentage of the median household income in a county for a typical family: the *RelativeSizeOfChecks*. We average this figure for all counties in each income quartile. Then, we multiply the discontinuity coefficients by the fraction of the checks' relative size for the bottom-income quartile, *RelativeSizeOfChecks*[1], and the relative size of checks of the given income quartile, *RelativeSizeOfChecks*^{q}:

$$
\beta_1^{*q} = \sum_{q=1,2,3,4} \beta_1^q \cdot \frac{RelativeSizeOfChecks^1}{RelativeSizeOfChecks^q} \cdot \\
\cdot 1\,[IncomeQuartile = q]
\qquad (3)
$$

In section 3, which details the initial drop of spending, we

use a multivariate OLS regression described in (4) to determine how did the severity of the initial drop in spending differ between counties based the individual demographic characteristics.

$$CumulativeDrop_i = \alpha_i + \beta_1(MedianHouseholdIncome)_i$$
$$+ \beta_2(Clinton2016)_i$$
$$+ \beta_3(TotalService)_i \qquad (4)$$
$$+ \beta_4(CaseRate)_i + \epsilon,$$

where the variables denote the median household income, the percentage of votes obtained by Hillary Clinton in the 2016 Elections the percentage of workers employed in services and the total number of COVID-19 cases per 100 000 inhabitants, documented in the county up till and including the 15th calendar week per 100 000.

Nevertheless, the results of this regression do not show based on which characteristic did the drop differ the most, as every variable has a different range. To determine the relative importance of the characteristics, we use the range in the characteristics. Formally, we use the following equation,

$$\Delta CumulativeDrop = \beta(Characteristic)_{75} - \beta(Characteristic)_{25}, \quad (5)$$

where β is the coefficient for the given characteristic, $(Characteristic)_{75}$ is the value of the characteristic in a county that belongs into the 75th percentile of counties based on this characteristic and $(Characteristic)_{25}$ is the value of the characteristic in a county that belongs into the 25th percentile.

3 The Effect of Demographic Characteristics in the Initial Drop

To better understand the reasons for why the effect of Stimulus Checks differed based on the demographic characteristics, we first study the period of initial drop in spending, which we measure from 11th to 15th calendar week. We regress the *CumulativeDrop* variable on the individual demographic characteristics according to (4) and document the results.

Every characteristic except the employment in services had a statistically significant effect on the value of *CumulativeDrop*. To determine the relative importance of the factors, we use coefficients from Table 1 as described in (5) and plot the results for the difference in *CumulativeDrop*.

Figure 1, for example, shows that the estimated difference in the average value of SpendAll between the 11th and 15th week is 1.42 pp lower in a county with a median household income of $63 400 than in a county with the same characteristics, except that the median household income in the second county would be $47 500.

These findings are important as they show that, albeit the drop in spending differed based on all four characteristics, the role of employment in services was not statistically significant. Moreover, while statistically significant, the total case rate did not markedly impact the size of *CumulativeDrop*. The median household income and political preferences of a county, on the other hand, did.
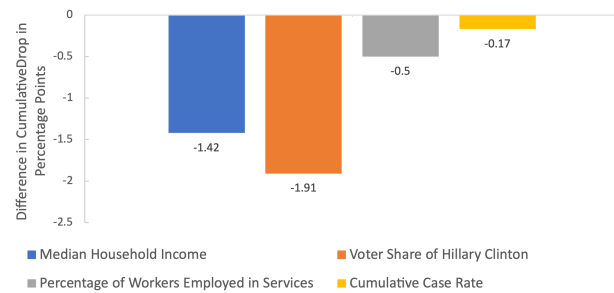

Figure 1: Difference in *CumulativeDrop* modeled according to the regression in (4).

We see that the cumulative drop in spending differed the most based on political preferences.

The importance of income and political preferences once again underlines how significant was the role of consumer confidence and pandemic fears in the reduction in spending and carries implications for the further analysis of the impact of Economic Impact Payments, as their success largely depends on the consumers' propensity to consume, which is profoundly influenced by these two factors.

4 Effects of Economic Impact Payments

4.1 The Overall Impact

Table 2, which displays the results for the regression for *SpendAll*, shows the Stimulus Checks had a marked effect on consumer spending levels. The discontinuity coefficients, β_1, are positive and statistically significant for all three time specifications. The results thus confirm the intuition that the distribution of checks increased consumer spending.

The regression including the nine-week-long period shows the discontinuity jump in spending levels to be 16.3 pp of January 2020 levels. Worth mentioning is the positive β_2^1 coefficient in the regression modelling spending in the seven-week-long period around the distribution of checks. The coefficient means that, when measured in the 7-week period, spending began to increase even before the checks' distribution. For the 7-week period, β_1 and β_2^2 are negative, meaning the pace of spending increase was significantly lower after their distribution, with even the discontinuous jump being negative. We postulate this is because of the strong signalization effect of the checks. The first studied week in this period coincides with the enactment of the CARES Act. That might have convinced households the worst has passed, increased their confidence and impelling them to increase their spending, which they have curbed to save for worse times.

We do not measure the signalization effect using regression discontinuity design. Although we could, we could try to distinguish the effects of the announcement of the

Table 1: Results of the OLS Regression for CumulativeDrop on the counties' demographic characteristics.

Term	Coefficient size	Standard Error	t-statistic	p-value	significance
α	−16.858	2.741	−6.149	0.000	***
CaseRate	−0.003	0.001	−2.977	0.003	**
MedianHouseholdIncome (in $1000)	−0.089	0.014	−6.445	0.000	***
TotalService	−0.048	0.033	−1.452	0.147	
Clinton2016	−0.089	0.014	6.283	0.000	***

Table 2: Results of the Regression Discontinuity Analysis for *SpendAll* for three time periods.

5 Weeks	CoefficientSize	Standard Error	t-statistic	p-value	significance
α	69.813	0.698	100.053	0.000	***
β_1	9.809	0.754	13.015	0.000	***
β_2^1	−1.115	0.441	−2.526	0.012	***
β_2^2	3.676	0.493	7.451	0.000	**

7 Weeks	CoefficientSize	Standard Error	t-statistic	p-value	significance
α	72.156	0.473	152.673	0.000	***
β_1	7.328	0.539	13.598	0.000	***
β_2^1	0.642	0.219	2.937	0.000	***
β_2^2	2.127	0.259	8.215	0.000	***

9 Weeks	CoefficientSize	Standard Error	t-statistic	p-value	significance
α	63.740	0.386	165.156	0.000	***
β_1	16.286	0.457	35.665	0.000	***
β_2^1	−4.407	0.141	−31.275	0.000	***
β_2^2	6.634	0.173	38.437	0.000	***

checks from their sending, we would be unable to control for the effect the already depressed consumption had on halting the trend. While households stopped decreasing their spending partly because of the CARES enactment, a more significant factor could be that they simply could not reduce consumption further, as it already consisted of predominantly non-discretionary items. The regression discontinuity results would then be necessarily skewed and exaggerate the signalization effect's size. Thus, we put forth the qualitative judgment that the signalization effect was significant, enough to halt the spending decrease, in conjunction with the minimum level of consumption constraint, but provide no quantitative judgment of its size.

4.2   The Effect of Income

The initial decrease in spending was most pronounced in the top income quartile and smallest in the bottom income quartile. The dataset shows that households in the top-quartile counties decreased their spending on average by around 8.0 pp per week while those in the lowest only by 6.7 pp. The results of the regression of *CumulativeDrop* on the counties' characteristics estimate the average value of *SpendAll* between the 11th and 15th week was around 1.42 pp lower in a county in the 75th income percentile than in a county in the 25th income percentile. The literature supports these findings. Chetty et al. (2020) show that top-quartile households

reduced their spending by 31 % from February to the end of March, while low-income households reduced theirs only by 23 % [4]. To illustrate how spending levels differed across income groups at the time of the checks' distribution, we plot the levels of *SpendAll* in four groups of counties divided based on their income.
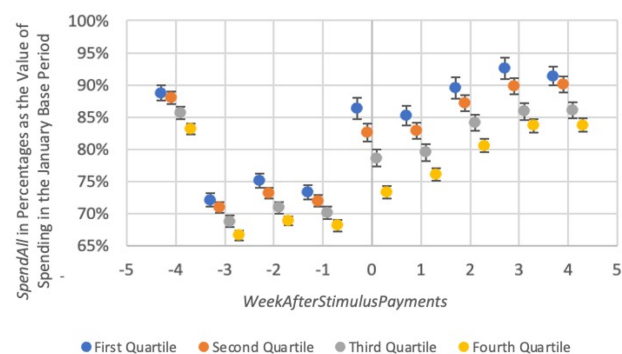

Figure 2: The Average value of *SpendAll* in the nine-week period around checks' distribution. Counties are divided into quartiles based on their median household income. Errors bars display the 95 % confidence intervals.

We then study how the Stimulus Checks affected the spending levels in different income groups. Figure 3 plots the discontinuity coefficients for *SpendAll* for counties divided into quartiles.

The checks had a statistically significant positive effect on *SpendAll* for all quartiles. Though the effect is hard to

quantify precisely as results differ based on the length of the studied period, the beginning of checks' distribution led to an increase in *SpendAll* of around 15 pp in counties in the bottom income quartile, around 13 pp in counties in the second-bottom quartile, 10 pp for counties in the second-top quartile and 7.5 pp in the top-income quartile. The findings are again consistent with those of Chetty et al. (2020) and Baker et al. (2020), who show wealthy households increased their spending the least [4, 5].
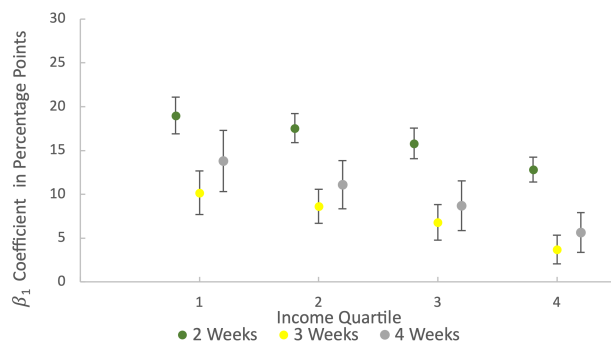
Figure 3: The Discontinuity Coefficients for checks' distribution effect on SpendAll for three different time periods in counties divided into quartiles based on their median household income. Errors bars display the 95 % confidence intervals.

The results demonstrate that the checks' effect was much larger in low-income counties even though higher-income counties decreased their spending more. A larger increase in spending of low-income counties follows intuition. We would expect lower-income households to increase their spending more, as the amount distributed by checks was proportionally larger for them.

However, the difference in the discontinuous spending rise persists, even when we control for the difference in the checks' relative size, by obtaining the adjusted coefficient β_1^* according to (5).

When we control for the relative size of the income supplement, the differences decrease but remain pronounced and statistically significant. That suggests that households with higher income tend to have a lower
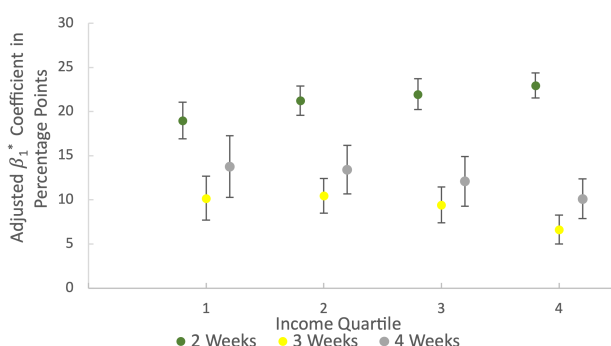

Figure 4: The Adjusted Discontinuity Coefficients for checks' distribution effect on *SpendAll* for three different time periods. The coefficients are adjusted for the relative size of checks' relative to the median household income of the counties. The counties are divided into quartiles based on their median household income. Errors bars display the 95 % confidence intervals.

MPC. After adjusting the coefficients to their relative size, the checks' impact on top-quartile counties' spending remains 3.6 pp and 3.8 pp smaller than on bottom-quartile counties' spending in the seven and nine-week-long periods, respectively. The coefficients controlled for the relative size are almost 50 % bigger for the bottom-income quartile than for the top-income quartile. The difference, albeit a smaller one, can also be observed between the bottom and second-top income quartile.

The RDD for the five-week-long period shows an opposite trend. This is, however, caused by the inclusion of a very short period. The five-week-long period does not reflect the fact that wealthier households started increasing their spending more before the distribution of the checks and continued increasing their spending after their distribution at a greater pace. The five-week-long RDD thus overstates the causal impact of checks on the spending of wealthy households.

The coefficients in Figure 4 probably even understate the difference. It can be assumed that if the size of checks to top-income households was increased, to be proportionally the same size as the checks for the bottom-income quartile, top-income households would save an even greater portion of them and the coefficients β_1^* for the higher income quartiles would be even smaller.

The persisting difference can be explained by wealthy households' lower propensity to consume. The lower propensity to consume is due to three reasons. First, as Baker et al. (2020) show, higher-income households disposed with greater liquidity, and the checks did not meaningfully impact their ability to increase spending. Moreover, the literature documents that wealthier Americans were, in general, more fearful about the pandemic and their spending reduction was driven in greater part by a drop in confidence rather than by income constraints, which would further decrease their propensity to spend the checks [21]. Wealthy households could also cut their spending more easily since a greater share of their consumption is discretionary, which is a factor not unique to the COVID recession. Altogether, these factors mean that additional income, even if the amount distributed was proportional to income, would have a relatively more minor effect on the spending of the top-income households.

The fact that high-income households have a lower propensity to spend universal payments highlights the shortfalls of this policy tool in a recession. Restoring high-income households' demand is crucial to restoring spending to pre-recession levels in any economic contraction since a reduction in higher-income households' spending would account for a greater share of the aggregate spending decline. However, universal payments cannot do that effectively because they provide a proportionally smaller income supplement to high-income households and because these households have a lower propensity to spend them. Nevertheless, they remain a potent tool for increasing the spending of low-income households who face considerable income constraints.

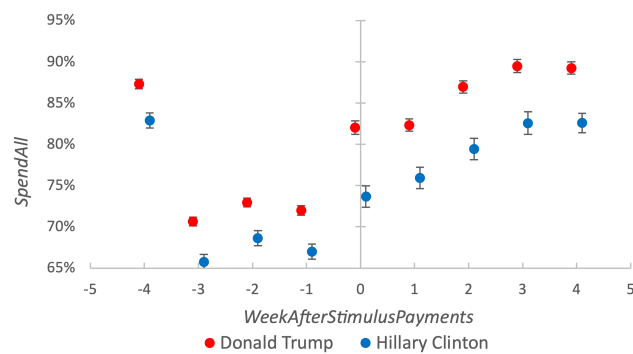In future recessions, we would thus recommend policy-

Figure 5: The average value of *SpendAll* in the nine-week period around checks' distribution in counties divided based on the winner of the 2016 Presidential Election. Errors bars display the 95 % confidence intervals.

Figure 6: The Discontinuity Coefficients for checks' distribution effect on *SpendAll* for three different time periods in counties divided based on the winner of the 2016 Presidential Election. Errors bars display the 95 % confidence intervals.

makers use payments with an even lower income cutoff. Our findings suggest an appropriate targeting might be the bottom half of households by income. By targeting low-income households with a high MPC, the payments would elicit a significant increase in consumption relative to their cost. However, such a policy could be only a supplementary one since it could not address the consumption reduction top-income households, which accounts for a greater share of the overall reduction.

4.3   The Effect of Political Preferences

Dividing counties based on the winner of the 2016 Presidential Elections shows that the spending decrease was more pronounced in democratic counties. The week before the checks, *SpendAll* in Democratic counties was around 5 pp lower than in Republican counties. Further analysis of the initial drop in consumer spending shows that democratic counties lowered their spending by around 0.5 pp more per week between the 11th and 15th calendar week, despite not registering a sharper decrease in income [22].

We divided counties based on the winner of the 2016 Presidential Elections to determine how the causal effect of checks differed between Democratic and Republican counties.

Despite reducing their spending more, the democratic counties' residents increased their spending less following the checks' distribution. The difference in the discontinuous jump in spending levels for all three measured periods is around 2 pp and the difference is statistically significant.

We propose two interrelated reasons for this difference. Firstly, the two groups' risk perceptions regarding the pandemic differed significantly. Democrats were, in general, more fearful of the economic and health risks posed by the pandemic [7, 8]. Consequently, they displayed lower levels of consumer confidence. Analysis by the Morning Consult shows that as of April 6th, the level of Democratic confidence was around 70 points while Republican confidence was still above 100 [23]. The level
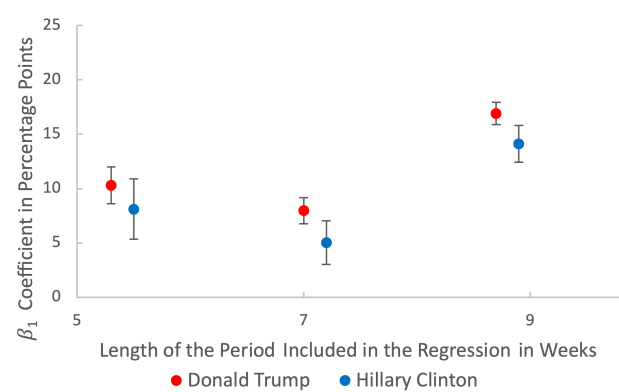
of confidence would affect the marginal propensity to save. Democrats thus would have saved a larger amount of their checks due to higher fears regarding the economic future. Literature also shows that groups which perceived the pandemic as more dangerous were more likely to avoid economic activities [24].

Furthermore, our data and the literature agree that the first wave of the pandemic hit the democratic counties harder [25]. Health concerns thus would have been greater in those counties which would once again feed into the above-mentioned lower level of consumer confidence.

The finding that democratic counties increased their spending less despite a more pronounced initial decrease is important for evaluating both the effectiveness of Stimulus Checks during the COVID pandemic and the general use of universal payments as a tool to combat recession. The key to the effectiveness of universal payments is that they are spent rather than saved [26, 27]. However, we show that lower levels of consumer confidence significantly muted the spending increase. Thus, in a situation like the COVID 19 recession, where the primary driver of spending decrease is a decrease in consumer sentiment, universal payments are not a suitable policy. Instead, more direct methods of fiscal stimuli, such as infrastructure spending, should be considered.

4.4   The Effect of Employment in Services

Next, we study the difference of checks' impact based on the percentage of workers employed in services. The literature agrees that counties dependent on the service industry were economically hit harder. Services sectors, such as leisure, hospitality or retail, and wholesale, saw the highest unemployment level [12]. Over 67 % of the consumer spending reduction came from a reduction of spending on services (Mathy, 2020) [11]. We once again stress the importance of this division. It enables us to see whether checks were able to increase spending relatively more in economically harder hit counties, as that is key for the policy's ability to reinvigorate the economy.
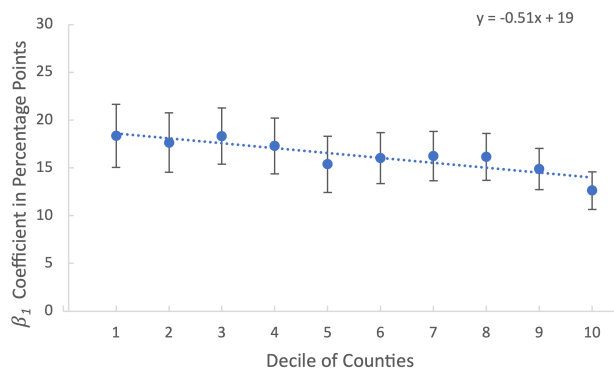
Figure 7: The Discontinuity Coefficients for checks' distribution effect on *SpendAll* periods in counties divided into deciles based on the percentage of workers employed in services. Errors bars display the 95 % confidence intervals.

We calculate the coefficients for the discontinuous increase in *SpendAll* in deciles of counties split based on the percentage of workers working in services.

The spending increase was highest in the first decile. *SpendAll* rose by 18.3 pp. The increase for the tenth decile, where more than 94 % of workers were employed in services, was only 12.6 pp. Regressing the coefficients for the deciles shows the increase was around 0.5 pp higher for a decile with higher employment in services.

We would expect the first reason for the lower spending jump in counties with higher employment in services to be a lower degree of consumer confidence caused by the worse economic situation which would underline the importance of confidence in the success of the checks.

A second reason, unique to the stratification based on the labor market structure, is that most states still had shelter-in-place orders. In the week the checks began to be distributed, 1495 of 1766 counties in our dataset had these orders in place and most service businesses, such as theme parks, restaurants, or cinemas, were closed. If we assume that, in normal circumstances, spending on services accounted for a greater portion of aggregate spending in counties with higher employment in services, then the increase in spending followed by the reception of checks would be smaller in those counties. Changes in spending habits, as consumers shifted their spending from services to durable goods, likely also played a role. Chetty et al. (2020) show that spending on durable goods rose by 21 pp while spending on in-person services increased by only 7 pp [4].

The inability of checks to increase spending in the services sector impacts the checks' ability to reinvigorate the economy. Baker et al. (2020) use a three-sector economy model to show how the closure of service businesses because of the lockdowns makes any stimulus significantly less effective, as the excess spending induced by the payments cannot flow to the workers in these sectors [5]. The payments thus will not provide adequate relief to the hardest hit sectors. Guerrieri et al. (2020) demonstrate how this inability of increased spending to flow into the hardest hit sectors and to its workers – who are the economic agents with the highest MPCs – adversely affects the effectiveness of any fiscal stimulus by breaking the links in the Keynesian multiplier feedback [11].

Importantly, we do not think this effect is unique to the COVID-19 recession but impacts the overall effectiveness of one-time payments in a recession. Though the lockdowns amplified the situation during the COVID-19 recession by making spending in the hardest-hit sectors virtually impossible, the spending induced by one-time payments would flow to the hardest-hit sectors in a limited amount even in most regular recessions, due to the change in spending habits that cause a sector to become the hardest-hit. Suppose that, in a recession, consumers decreased their spending the most on durable goods. The hardest hit sector would thus be manufacturing, and durable goods would form a smaller portion of consumer expenditures. They would spend a proportionally smaller amount of their one-time payments on durable goods than in normal conditions. Consequently, only a small portion of spending would flow into this sector, leading to the problems alluded to by Baker et al. (2020) and Guerrieri et al. (2020).

One-time payments thus cannot provide adequate assistance to the hardest hit sectors in a recession, which means they must be supplemented with policies specifically designed to help the most severely affected sectors. We defer to Cirera et al. (2020) who propose to provide companies with needed liquidity through credit and wage subsidies [28]. Those policies could resemble the Paycheck Protection Program and Main Street Lending Program enacted during the pandemic. We also recommend temporarily increasing the unemployment benefits. Multiple studies have shown that these three policies stimulated consumption, decreased poverty, and prevented larger employment losses [29–32]. Their use in future recessions is thus warranted.

4.5 The Effect of Health Situation

Lastly, we study the heterogeneity of the checks' effect based on the health situation. We divide counties based on their 7 days rolling average of new cases per 100,000 citizens in the week the checks were began to be distributed. The results of the regression of *CumulativeDrop* show counties with worse health situations decreased their spending more, and the effect is statistically significant. The findings thus suggest that the health situation impacted consumers' spending habits. A worse health situation compelled consumers to save more, probably due to greater health concerns.

The regression discontinuity analysis further suggests that the case rate impacted consumers' spending habits.

The jump was 19.9 pp for counties in the first decile but only 15.8 pp in the hardest-hit counties. Regressing the coefficients shows the estimate for the jump is 0.24 pp smaller in a county that falls into a marginally higher decile. Nevertheless, the difference is quite small and much less pronounced than what we observe based on in-
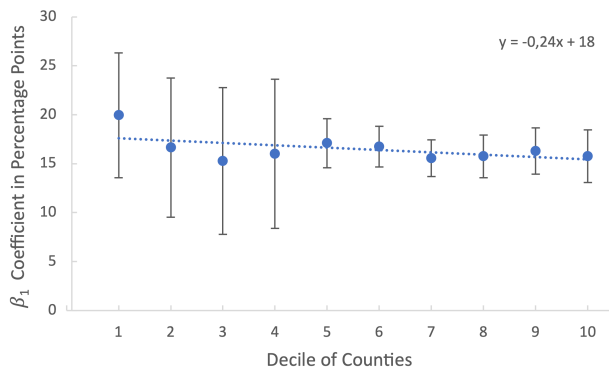
Figure 8: The Discontinuity Coefficients for checks' distribution effect on $SpendAll$ periods in counties divided into deciles based on the 7 days rolling average of new case rate in the county. Errors bars display the 95 % confidence intervals.

come, political preferences, and employment in services. That is consistent with the literature which shows other factors, like local lockdown restrictions, fears, or income constraints, had a larger impact on consumers' spending behavior [33].

We propose two reasons why the difference based on the health situation is much less pronounced than the difference based on political preferences, even though both characteristics affect the citizens' concerns and thus their level of confidence. Firstly, the situation in a county might not have impacted citizens' perception of the pandemic situation as significantly as the situation in their state or the entire nation.

Secondly, the health situation in a county is an imperfect proxy of the counties' citizens' concerns, which drives their propensity to spend or save the checks. Instead, the level of concern is a function of the county's case rate and the inherent characteristics of the county's citizens, which influence how risky is the case rate perceived:

$$\omega = \beta NewCaseRate, \qquad (6)$$

where ω measures the overall level of economic and health concerns regarding the pandemic and β is the coefficient given by the perception of the county's citizens. The fact that β would vary significantly based on political preferences and income explains why the health situation in a county had a relatively less pronounced effect on the checks' impact and mean that the actual health situation is not as crucial for economic recovery as hitherto thought.

These conclusions seemingly conflict with the prevailing literature, which sees the improvement of the health situation as a *sine qua non* of the economic recovery (Romer 2020, Allen et al. 2020). But rather than disagree with this proposition, we would vary it slightly. For an economic recovery, it might be even more important to convince consumers that the situation has improved than for the situation to actually improve [34].

5   Conclusion

The empirical findings show that the Stimulus Payments fulfilled one of their primary goals: to increase consumer spending. There was a large discontinuous jump in spending across counties, in the week checks were beginning to be sent and the growth in spending continued in the period afterwards.

The effect, however, differed markedly amongst different income groups. The largest increase was observed in low-income counties. One reason was that the checks' for low-income households were both absolutely and relatively larger. But our findings show that does not account for the entire difference. The second reason, also proposed by Baker et al., is that high-income households had a lower propensity to consume, both due to higher liquidity and because their spending reduction was to a greater degree voluntary. This finding is problematic. It means checks cannot boost wealthy households' demand as effectively as poor households'. Yet boosting wealthy households' demand is critical for overall economic recovery since their spending accounts for a greater share of aggregate spending. Any future policy similar to the Stimulus Checks should thus be accompanied by policies designed to raise wealthy households' demand, primarily by restoring their confidence.

Another factor to consider is that the payments' effectiveness depends on consumer confidence. Democrats, who cut their spending more due to greater concerns, increased their spending less following the checks. The effect of consumer confidence was large enough that counties with higher employment in services, which were economically harder hit, increased their spending less following the checks' distribution – possibly because fears about the economic future increased their propensity to save. What is also problematic is that the lockdowns and business closures made it impossible for the increase in spending induced by the checks to flow to the hardest-hit sectors. That hampered the checks' ability to help these sectors recover and decreased the effectiveness of the checks.

Though the lockdowns were specific to this recession, a similar effect, where a smaller portion of payments would flow to the hardest-hit sectors, could also occur in future recessions. That makes one-time payments a less potent tool for overall economic recovery since they must be supplemented by relief targeted at the heaviest hit sectors. Examples of these policies enacted during the pandemic would be the Paycheck Protection Program or Main Street Lending Program.

The role of consumer confidence was apparent even in the division based on the health situation. However, the difference based on infection rates was less pronounced than those based on other factors. That suggests the consumers' perception of the risks posed by the health situation is more important than the actual health situation.

The payments successfully fulfilled their goals, albeit ineffectively due to being targeted only very loosely. But

that also meant the policy was easy to implement, which was crucial when the economy was in free fall. However, our findings suggest restoring consumer confidence might be even more essential to facilitate economic recovery. Policymakers should thus promote policies designed to alleviate pandemic fears instead of further using one-time payments. Such policies should aim to increase vaccination rates, improve the general health situation, and induce a sense of normalcy by easing restrictions.

We warn against considering one-time payments as a panacea for future recessions. Their deficiencies mean other policies must supplement them. They nevertheless remain a potent, albeit blunt, tool for raising consumer expenditures. To make them more efficient, we suggest making them much more strictly targeted at low-income groups facing significant income constraints. The multiplier effect would then ensure the payments' impact would reverberate through the economy, setting it on a path to recovery.

ABBREVIATIONS

COVID	Coronavirus Disease
MPC	Marginal Propensity to Consume
RDD	Regression Discontinuity Design

References

(1) H.R.748 - 116th Congress (2019-2020), CARES Act https://www.congress.gov/bill/116th-congress/house-bill/748 (accessed 03/11/2021).

(2) Holtzblatt, J.; Karpman, M. Who Did Not Get The Economic Impact Payments By Mid-To-Late May, And Why? https://www.urban.org/sites/default/files/publication/102565/who-did-not-get-the-economic-impact-payments-by-mid-to-late-may-and-why_0.pdf.

(3) Dalziel, P. *Journal of Post Keynesian Economics* **1996**, *18*, 311–331, DOI: 10.1080/01603477.1996.11490075, https://doi.org/10.1080/01603477.1996.11490075.

(4) Coibion, O.; Gorodnichenko, Y.; Weber, M. *How Did U.S. Consumers Use Their Stimulus Payments?*; Working Paper 27693; National Bureau of Economic Research, 2020, DOI: 10.3386/w27693, http://www.nber.org/papers/w27693.

(5) Karger, E.; Rajan, A. **2020**, DOI: 10.2139/ssrn.3612828, https://doi.org/10.2139/ssrn.3612828.

(6) Chetty, R.; Friedman, J. N.; Hendren, N.; Stepner, M.; Team, T. O. I. *The Economic Impacts of COVID-19: Evidence from a New Public Database Built Using Private Sector Data*; Working Paper 27431; National Bureau of Economic Research, 2020, DOI: 10.3386/w27431, http://www.nber.org/papers/w27431.

(7) Baker, S. R.; Farrokhnia, R.; Meyer, S.; Pagel, M.; Yannelis, C. *How Does Household Spending Respond to an Epidemic? Consumption During the 2020 COVID-19 Pandemic*; Working Paper 26949; National Bureau of Economic Research, 2020, DOI: 10.3386/w26949, http://www.nber.org/papers/w26949.

(8) Gollwitzer, A.; Martel, C.; Brady, W. J.; Pärnamets, P.; Freedman, I. G.; Knowles, E. D.; Bavel, J. J. V. **2020**, *4*, 1186–1197, DOI: 10.1038/s41562-020-00977-7, https://doi.org/10.1038/s41562-020-00977-7.

(9) Romer, P. Roadmap to Responsibly Reopen America https://roadmap.paulromer.net/.

(10) Allcott, H.; Boxell, L.; Conway, J. C.; Gentzkow, M.; Thaler, M.; Yang, D. Y. *Polarization and Public Health: Partisan Differences in Social Distancing during the Coronavirus Pandemic*; Working Paper 26946; National Bureau of Economic Research, 2020, DOI: 10.3386/w26946, http://www.nber.org/papers/w26946.

(11) Mathy, G. The COVID-19 Epidemic will be the First Services Recession and it Could be a Bad One http://gabrielmathy.weebly.com/blog/the-covid-19-epidemic-will-be-the-first-services-recession-and-it-could-be-a-bad-one.

(12) Falk, G.; Romero, P. D.; Nicchitta, I. A.; Nyhof, E. C. *Unemployment Rates During the COVID-19 Pandemic*; tech. rep.; 2021, https://crsreports.congress.gov/product/pdf/R/R46554.

(13) Guerrieri, V.; Lorenzoni, G.; Straub, L.; Werning, I. **2020**, DOI: 10.2139/ssrn.3570096, https://doi.org/10.2139/ssrn.3570096.

(14) Allen, D.; Block, S.; Cohen, J.; Eckersley, P.; Eifler, M.; Gruener, D. *Roadmap to pandemic resilience, Massive Scale Testing, Tracing, and Supported Isolation (TTSI) as the Path to Pandemic Resilience for a Free Society*; tech. rep.; 2020, https://ethics.harvard.edu/files/center-for-ethics/files/roadmaptopandemicresilience_updated_4.20.20_0.pdf.

(15) Teresiene, D.; Keliuotyte-Staniuleniene, G.; Liao, Y.; Kanapickiene, R.; Pu, R.; Hu, S.; Yue, X.-G. **2021**, *14*, 159, DOI: 10.3390/jrfm14040159, https://doi.org/10.3390/jrfm14040159.

(16) Goolsbee, A.; Syverson, C. *Fear, Lockdown, and Diversion: Comparing Drivers of Pandemic Economic Decline 2020*; tech. rep.; 2020, DOI: 10.3386/w27432, https://doi.org/10.3386/w27432.

(17) *Making the Stimulus Checks Count, How Congress Can Better Target a Second Round of Economic Impact Payments*; tech. rep.; 2020, https://www.aei.org/wp-content/uploads/2020/07/Making-the-Stimulus-Checks-Count.pdf.

(18) MIT Election Data And Science Lab County Presidential Election Returns 2000-2020, 2018, DOI: 10.7910/DVN/VOQCHQ, https://dataverse.harvard.edu/citation?persistentId=doi:10.7910/DVN/VOQCHQ.

(19) Dong, E.; Du, H.; Gardner, L. **2020**, *20*, 533–534, DOI: 10.1016/s1473-3099(20)30120-1, https://doi.org/10.1016/s1473-3099(20)30120-1.

(20) Current Population Survey, 2019 Annual Social and Economic (ASEC) Supplement conducted by the Bureau of the Census for the Bureau of Labor Statistics https://www.census.gov/programs-surveys/cps.html.

(21) Harris, K. Young, Wealthy And Worried, How Americans Perceive The Pandemic https://www.bain.com/insights/young-wealthy-worried-americans-perceive-pandemic-snap-chart/.

(22) The Economist/Yougov Poll April 19 - 21, 2020 https://docs.cdn.yougov.com/pwwefjdnsp/econTabReport.pdf.

(23) Leer, J. A Drop In Consumer Confidence During The Pandemic Isn'T A Partisan Issue https://morningconsult.com/2020/07/21/a-drop-in-consumer-confidence-during-the-pandemic-isnt-a-partisan-issue/.

(24) Bundorf, M. K.; DeMatteis, J.; Miller, G.; Polyakova, M.; Streeter, J.; Wivagg, J. *Risk Perceptions and Protective Behaviors: Evidence from COVID-19 Pandemic*; tech. rep.; 2021, DOI: 10.3386/w28741, https://doi.org/10.3386/w28741.

(25) The political profile of congressional districts hard hit by COVID-19 has changed substantially since spring https://www.pewresearch.org/politics/2020/12/08/the-changing-geography-of-covid-19-in-the-u-s/pp_2020-12-08_covid-geography_de-02/.

(26) Stimulus Check, A check sent to taxpayers that is intended to encourage consumer spending https://corporatefinanceinstitute.com/resources/knowledge/economics/stimulus-check/.

(27) Sahm, C.; Shapiro, M.; Slemrod, J. *Check in the Mail or More in the Paycheck: Does the Effectiveness of Fiscal Stimulus Depend on How It Is Delivered?*; tech. rep.; 2010, DOI: 10.3386/w16246, https://doi.org/10.3386/w16246.

(28) Cirera, X.; Cruz, M.; Davies, E.; Grover, A.; Iacovone, L.; Cordova, J. E. L.; Medvedev, D.; Maduko, F. O.; Nayyar, G.; Ortega, S. R.; Torres, J. **2021**, *36*, 41–66, DOI: 10.1093/wbro/lkab001, https://doi.org/10.1093/wbro/lkab001.

(29) E Castro, M. F. *Fiscal Policy during a Pandemic*; tech. rep.; 2020, DOI: 10.20955/wp.2020.006, https://doi.org/10.20955/wp.2020.006.

(30) Karpman, M.; Acs, G. *Unemployment Insurance and Economic Impact Payments Associated with Reduced Hardship Following CARES Act*; tech. rep.; 2020, https://www.urban.org/sites/default/files/publication/102486/unemployment-insurance-and-economic-impact-payments-associated-with-reduced-hardship-following-cares-act.pdf.

(31) Han, J.; Meyer, B.; Sullivan, J. *Income and Poverty in the COVID-19 Pandemic*; tech. rep.; 2020, DOI: 10.3386/w27729, https://doi.org/10.3386/w27729.

(32) Hubbard, G.; Strain, M. Has The Paycheck Protection Program Succeeded? https://www.brookings.edu/bpea-articles/has-the-paycheck-protection-program-succeeded/.

(33) Fairlie, R.; Fossen, F. *Sales Losses in the First Quarter of the COVID-19 Pandemic: Evidence from California Administrative Data*; tech. rep.; 2021, DOI: 10.3386/w28414, https://doi.org/10.3386/w28414.

(34) Vai, B.; Cazzetta, S.; Ghiglino, D.; Parenti, L.; Saibene, G.; Toti, M.; Verga, C.; Wykowska, A.; Benedetti, F. **2020**, *11*, DOI: 10.3389/fpsyg.2020.563426, https://doi.org/10.3389/fpsyg.2020.563426.