How did the US Household Respond to the Economic Impact Payments of 2020? Evidence from the Consumer Expenditure Survey

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Introduction

The outbreak of the COVID-19 pandemic has created unprecedented public health, economic, and social crises not only in the United States but also globally. In response to the economic downturn, the Coronavirus Aid, Relief and Economic Security (CARES) Act was passed in March 2020, which included various measures to combat the effects of the pandemic. One of the crucial steps implemented under this act was the provision of one-time economic impact payments (EIP) to individuals. The EIPs were a historic direct payment, equivalent to 14.2 percent of quarterly median family income and 13.3 percent of quarterly personal consumption expenditures, aimed at providing immediate financial assistance to households and stimulating consumer spending. These payments played a critical role in mitigating the impact of the pandemic on the economy and enhancing the financial resilience of households.

Multiple studies have analyzed the effects of the 2020 CARES Act stimulus payment and found evidence of variation in consumer response based on socioeconomic factors such as household income, employment status, and place of residence. Coibion, Gorodnichenko, and Weber (2020) found that US households spent approximately 40% of their stimulus payment, with substantial heterogeneity in consumer response. Carroll et al. (2020) observed that those on temporary layoff benefited from the CARES Act and extended unemployment insurance, which allowed them to stabilize their consumption. Employed individuals tended to save most of their economic impact payment, with only 20% spent immediately, even without lockdown. Karger and Rajan (2020) analyzed anonymized transaction-level debit card data from Facteus and observed a marginal propensity of consumption (MPC) of 50% for the $1200 stimulus payment, with varying estimates of MPC by household income. Low-income households, who typically live paycheck to paycheck, spent 62% of their payment within two weeks, while higher-income

families spent only 35% of their economic impact payment amount during the same period. Kubota, Onishi, and Toyama (2020) also observed an immediate increase in spending after receiving the stimulus payment, indicating wealth mouth-to-hand behaviors.

Chetty et al. (2020) used credit card transaction data from Affinity Solutions. They found that consumer spending increased by 26 percentage points after the CARES stimulus payment, with a 9 percentage point increase for low-income and high-income households. Baker et al. (2020) used data from the personal financial app SaverLife and observed an MPC range of 25%-40% during the first week of stimulus payment, with the most significant effect among low-income families with limited liquidity. Those who expected job loss and UI benefit reductions demonstrated weaker responses to the stimulus.

Armantier et al. (2020) found that around 35% of the stimulus payment was used to pay off debt, 29% was used for consumption, and the rest was saved. Misra, Singh, and Zhang (2020) utilized the geographical variation in stimulus disbursement timing to estimate the marginal propensity to consume, and they found significant cross-sectional heterogeneity, with MPC estimates three times higher in densely populated urban areas with a higher cost of living. Bhutta et al. (2020) observed that the CARES Act improved household financial security and prevented liquidity constraints, which would have affected over half of the families for six months without the Act's intervention.

This study measures the change in household spending directly caused by the receipt of the Economic Impact Payments (EIP) provided by the Coronavirus Aid, Relief and Economic Security (CARES) Act of 2020. We leverage the sharp increase in income resulting from the EIPs as a quasi-experiment to identify the causal effect of stimulus payments on household spending. Furthermore, we test the rational expectations life-cycle/permanent income hypothesis

(LCPIH) and its implication that consumers should not respond to predictable changes in their income. Our analysis provides valuable insights into the effectiveness of government stimulus payments in promoting household spending and mitigating the economic impact of the pandemic.

We find that households spent a significant portion, on average 14-25%, of their EIP on various goods and services during the three-month period in which the payment was received, with approximately two-thirds of the payment spent cumulatively during the receipt period and subsequent quarters. These findings are statistically and economically significant. Our results indicate that households do indeed respond to income changes, a response that exceeds the expectations of the rational expectations life-cycle/permanent income hypothesis (LCPIH). We also find that the magnitude of the response to the CARES Act EIP was greater for nondurable and total expenditures than for previous stimulus payments in 2001 and 2008. These results provide valuable insights into the effectiveness of government stimulus payments in promoting household spending and economic recovery during times of crisis.

The remainder of this paper is organized as follows. Section 2 presents the program description. In section 3, the empirical framework is presented. Section 4 presents the data and discusses some summary statistics. Section 5 presents the main results regarding the short-run response to the economic impact payments, while section 6 examines the longer-run response, followed by the marginal propensity to spend. The final section concludes with policy recommendations and suggestions for future research.

Program Background

On December 27, 2020, the President signed the $900 billion COVID-19 relief package into law, which includes the second round of stimulus checks that pay up to $600 per person for eligible Americans. The United States Internal Revenue Service determines the eligibility and amount of economic impact payment an individual gets based on the 2019 or 2020 tax return. The IRS made payment via direct deposit, debit card, and paper checks directly to the taxpayers. Stimulus payment eligibility individuals are those:

(1) with a 2019 adjusted gross income (AGI) of $75,000 or less receive the $600 check,

(2) For individuals making more than $75,000 and up to $87,000, the payment amount is reduced by $5 for every $100 in AGI above $75,000.

(3) a married couple filing jointly with AGI of $150,000 or less gets $600

(4) a married couple filing jointly with AGI for more than $150,000 and up to $174,000, the amount of payment would gradually decrease from $600 by $5 for every $100 in AGI starting at $150,000.

(5) heads of household with AGI of $112,500 or less receive a complete $600

(6) heads of households making more than $112,500 and up to $124,500, the payment reduced from $600 at a rate of $5 for every additional $100 in AGI above $112,500.

(7) household having a dependent under the age of 17 would get an additional $600 check for every dependent, and there is no limit on the number of dependents a household can claim

Data and Descriptive Statistics

We analyze public use microdata collected from the Consumer Expenditure (CE) Interview Survey from December 2019 to Dec 2020. The consumer expenditure survey contains detailed measures of household expenditures for a stratified random sample of US households. Households are interviewed four times, at three-month intervals, and they are asked about their spending over the previous three months (current and previous quarters). As new households are added to the survey each month, this data can be used to identify spending patterns and effects of economic impact payments disbursed in different months. The analysis sample consists of 4145 observations.

We analyze three outcome variables: spending on food, non-durables, and total spending. Food spending includes FAH, FAFH, and spending on alcohol products.

Households spend an average of $114.60 per quarter on food and $469.81 on non-durable goods. On average total spending of households is $657.33 per quarter. The average age of the household head is 55 years. On average, households have 0.51 children.

Empirical Framework

Our main estimating equation (1) is consistent with specifications in the previous literature (Parker 1999; Souleles 1999; Parker et al., 2013).

$$C_{i,t+1} - C_{i,t} = \beta_0 + \beta_1 EIP_{i,t+1} + X'_{ist}\alpha + \omega_t + \epsilon_{ist} \qquad (1)$$

Where *i* represents households, *t* represents time, *C* is household expenditure or their log, and X represents a set of control variables such as age, number of children, and adults. We also use

distributed lag models that are interpreted as event studies to estimate the quarter-by-quarter response of spending to the EIP as given by equation (2)

$$C_{i,+1} - C_{i,t} = \beta_0 + \beta_1 EIP_{i,t+1} + \sum_{\tau \neq 1} \theta_\tau EIP_{i,t+1} \times I[t - E = \tau] + X'_{ist}\alpha + \omega_t + \epsilon_{ist} \qquad (2)$$

Each lead coefficient θ_τ measures the deviation of the average outcome of EIP recipients at quarter t from the common trend ω_t. To control for seasonality in consumption or expenditures we use month effects. Our key economic impact payment variable is $EIP_{i,t+1}$, which takes one of the three forms: (i) a dummy variable indicating whether any payment was received in t + 1 (I($EIP_{i,t+1} > 0$)); (ii) a distributed lag of EIP or I(EIP>0), used to measure the long-run effects of the economic impact payments; and (iii) the total dollar amount of payments received by household i in period t + 1 ($EIP_{i,t+1}$).

Results

The short-run impact of EIP on Expenditure

We estimate the change in consumption expenditures caused by receipt of economic impact payment during the three-month period of receipt, using the contemporaneous payment variable $EIP_{i,t+1}$ and I($EIP_{i,t+1} > 0$) in equation(1). Table 2 reports the contemporaneous response of expenditure to the Economic Impact Payment receipt.

Our findings indicate a notable increase in household expenditures when they receive economic impact payments. Households, on average, increase their expenditures on food by around 15 percent of the payment during the three-month period in which they received a payment. This increase in expenditures is statistically significant and holds important implications for policymakers who seek to understand the consumption behavior of households. During the three-

month period in which they received payment, a household, on average, increased its expenditures on non-durable goods by about 20 percent of the payment. This result is statistically significant. The third column shows that expenditures on total consumption increased on average by 25 percent of the payment, a substantial and statistically significant amount.

The long-run impact of EIP on Expenditure

To study the long-run effect of the receipt of economic impact payment, we add a distributed lag of the payment variable EIP or I(EIP>0). We assume the differences in the timing of economic impact payment receipts are exogenous. By comparing the households that differ in the random timing of receipt, the results in Table 3 trace out the lagged effects of EIP receipt on expenditures pattern. The coefficient on the lag of EIP measures the percentage change in spending in the three-month period following the three-month period of receipt.

The results indicate that in the second three-month period, cumulative expenditures on food and non-durables increase by 30 and 58 percent, respectively. These percentage changes in the second three-month period after the receipt of payment are statistically significant. The third column shows that cumulative expenditures in total consumption rise by around 66 percent, which is statistically significant. In sum, we find strong evidence of spending response in the second three-month period after receiving economic impact payments.

Marginal Propensity to Spend (MPS)

The Marginal Propensity to Spend (MPS) measures the change in consumption as a result of a change in income. It is the proportion of an additional increment of income that a consumer spends on goods and services, rather than saving it. We use the following formula to calculate MPS:

$$MPS_{i,t} = C_{i,t+1} - C_{i,t} / Y_{i,t+1} - Y_{i,t}$$

$$MPS = \Delta C_i / \Delta Y_i$$

where, ΔC_i is the change in consumption and ΔY_i is the change in income.

We find MPS to be 0.14 for food consumed at home and away from home. The result indicates that if an individual's income increases by $100, the individual spending on food (FAH, FAFH, and alcohol products) increases by $14. For non-durable goods we find MPS to be 0.32. This implies that for every additional dollar of income, the individual spends $0.32 and saves $ 0.68. Similarly, for total spending, we find that MPS is 0.54, which means individual spending increases by $54 for every $100 additional income.

Conclusion

We find that on average households spent about 14 to 25 percent of their economic impact payments, depending on the specification during the three-month period in which they receive the payments. Around two-thirds of the economic impact payment was spent cumulatively during the three months of receipt and subsequent quarters. This response is larger than implied by the life cycle permanent income hypothesis (LCPIH). For non-durables and total expenditures, the estimated response to the economic impact payment under the CARES Act was bigger in magnitude than the response to the previous stimulus payments of 2001 and 2008. This difference might partly reflect the differences in the macroeconomic situation.

We believe these findings provide insights into how government disbursements affect consumer spending during economic uncertainty.

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Table 1. Summary Statistics

Variable	**Mean**	**Standard dev.**
Food spending	114.6	859.22
log (food spending)	0.11	0.7
Non-durable spending	469.81	7601.53
log (non-durable spending)	0.11	0.91
Total spending	657.33	8592.75
log (total spending)	0.1	0.84
Age	55.24	17.17
Age2	54.02	16.1
Child no	0.51	0.99
Old_64	0.53	0.72

Table 2. The Contemporaneous Response of Expenditures to EIP Receipt

	Δ log(Food spending)	Δ log(non-durable spending)	Δ log (Total spending)
EIP $_{i, t+1}$	0.146***	0.195***	0.251***
	(0.024)	(0.029)	(0.029)
lag1	0.360***	0.414***	0.403***
	(0.041)	(0.051)	(0.046)
lag2	0.467***	0.522***	0.512***
	(0.051)	(0.055)	(0.051)
lag3	1.055***	1.275***	1.246***
	(0.072)	(0.086)	(0.079)
lead2	-0.237***	-0.285***	-0.279***
	(0.044)	(0.060)	(0.056)
lead3	-0.662***	-0.745***	-0.724***
	(0.063)	(0.083)	(0.081)
Age	0.004	0.004	0.003
	(0.004)	(0.005)	(0.005)
Age2	-0.003	-0.002	-0.002
	(0.003)	(0.004)	(0.004)
Child #	0.048***	0.049**	0.048**
	(0.016)	(0.020)	(0.020)
Older adult #	-0.033	-0.030	-0.032
	(0.042)	(0.044)	(0.044)
Constant	-0.077	-0.123	-0.119
	(0.080)	(0.099)	(0.095)
Observations	4142	4145	4147
R-squared	0.155	0.109	0.118

Robust standard errors in parentheses. *Significant at the 10% level; **Significant at the 5% level; ***Significant at the 1% level.

Table 3. The Longer-Run Response of EIP on Expenditures

	Δ log(Food spending)	Δ log(non-durable spending)	Δ log (Total spending)
I(EIPt+1)	0.307***	0.577***	0.657***
	(0.048)	(0.065)	(0.058)
Age	0.004	0.004	0.003
	(0.004)	(0.005)	(0.005)
Age2	-0.003	-0.002	-0.002
	(0.003)	(0.004)	(0.004)
Child #	0.046***	0.047**	0.045**
	(0.016)	(0.021)	(0.020)
Older adults	-0.032	-0.030	-0.031
	(0.044)	(0.045)	(0.045)
Constant	-0.268***	-0.334***	-0.327***
	(0.087)	(0.108)	(0.103)
Observations	4142	4145	4147
R-squared	0.115	0.076	0.084

Robust standard errors in parentheses. *Significant at the 10% level; **Significant at the 5% level; ***Significant at the 1% level.