

How Do Households React to Debt Forbearance? Evidence from Microdata

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ABSTRACT

Drawing on the lessons of the 2008-2009 foreclosure crisis, governments worldwide implemented large-scale debt moratoria in response to the COVID-19 pandemic. We study household debt forbearance using account-level transactions from a large Portuguese bank and a unique setting combining government and private forbearance. We show that the suspension of mortgage repayments can have significant and persistent effects on households' consumption and savings at 25 and 40 cents per euro of postponed payments. The effect is heterogeneous across households with different income and wealth: low-income and low-wealth households spend 74 cents per euro, consuming above their pre-pandemic average, while high-income and high-wealth households save 79 cents per euro with no effect on consumption. In addition, we find similar similar effects for the small group of households that accepted the extension of the forbearance offered by banks at the end of the government forbearance. Our findings suggest that more targeted debt relief programs can avoid household financial distress with a lower cost to financial institutions.

JEL classification: E21, E62, G28, H31, G50

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1 Introduction

The provision of large-scale debt relief to distressed borrowers is riddled with information frictions between lenders and borrowers (Adelino, Gerardi, and Willen (2013), Eberly and Krishnamurthy (2014)), as well as institutional frictions such as securitization (Piskorski, Seru, and Vig (2010), Agarwal, Amromin, Ben-David, Chomsisengphet, and Evanoff (2011), and Kruger (2018)) and intermediary financial and organizational constraints (Aiello (2022)). Designing public policies to assist borrowers requires making trade-offs between a quick-to-implement and catch-all approach that targets most households (minimize type II error) versus a slower and document-intensive approach that targets only “truly” distressed households (minimize type I error). The U.S. government’s response took primarily the latter approach during the Great Recession. In fact, even after the implementation of the Home Affordable Modification Program (HAMP) that provided incentives for financial intermediaries to modify delinquent home mortgages, as many as two-thirds of heavily indebted households never received assistance (Agarwal, Amromin, Ben-David, Chomsisengphet, Piskorski, and Seru (2017), Noel (2021)). The failure to provide debt relief to more households likely led to employment losses and the slow economic recovery after the 2008-2009 foreclosure crisis (Mian and Sufi (2014), Dynan, Mian, and Pence (2012), Piskorski and Seru (2021)).

During the initial months of the COVID-19 pandemic, and in stark contrast with the 2008-2009 foreclosure crisis, governments worldwide put in place debt forbearance programs for a vast number of households in anticipation of potential distress and defaults. In Portugal, any household affected directly by the lockdowns or suffering a drop in income of 20% or more due to the pandemic could benefit from a suspension on debt repayments. As of June 2020, €17 billion mortgages were on repayment moratoria, comprising about 18% of households’ mortgages.¹

¹Portugal was among the top three countries in Europe with the highest share of mortgages on repayment moratoria. According to the European Banking Authority (EBA), €365 billion in household loans (€268 billion of which were mortgages) entered moratoria in the Euro area in by June 2020, about 7% of household loans (Nicolaou (2020)). The U.S. Government Accountability Office reports that the use of forbearance peaked in the United States in May 2020 at about 7% of single-family mortgages (about 3.4 million) and gradually declined to about 5% percent by February 2021 (Pendleton, 2021).

While the consumption and delinquency effects of the policies in the Great Recession are, by now, well documented (Agarwal, Amromin, Ben-David, Chomsisengphet, Piskorski, and Seru (2017), Abel and Fuster (2021), Agarwal, Amromin, Chomsisengphet, Landvoigt, Piskorski, Seru, and Yao (2015), Ganong and Noel (2020)), the effects of large-scale debt forbearance programs are not well understood. Cherry, Jiang, Matvos, Piskorski, and Seru (2021) and Gerardi, Lambie-Hanson, Willen, et al. (2022) show that public and private debt relief during the COVID-19 pandemic contributed to a low level of delinquencies in the United States. Debt relief flowed more to higher income individuals than to those receiving stimulus checks, partially due to their higher debt balances, but forbearance rates and the drops in delinquency were higher among low income and minority individuals (Shi (2022), An, Cordell, Geng, and Lee (2022), Gerardi, Lambie-Hanson, Willen, et al. (2021)).²

This paper uses a new microdata panel from a large Portuguese bank to investigate the effect of government and private debt forbearance—that is, temporary suspension of debt payments—on household consumption and savings and averting household debt distress. A better understanding of the impact of debt forbearance on household consumption and savings decisions is a crucial step to make better use of financial stability tools that operate through the household liquidity channel.

The data include transaction-level data from checking and savings accounts, credit and debit cards, as well as transfers in and out of each account in the period 2018-2022. This allows us to precisely measure the effect of forbearance on consumption and savings for each household, separately from changes in income. We study the two waves of mortgage forbearance during the COVID-19 pandemic. The initial debt forbearance program put in place by the Portuguese government in March 2020 allowed any household affected by the pandemic (i.e., exposed to sectors directly affected by the lockdowns or that suffered a drop in income) to request a suspension of payments on mortgages and other personal loans. We

²Financial intermediary frictions may have prevented some borrowers from receiving forbearance during the COVID-19 pandemic (Kim, Lee, Scharlemann, and Vickery (2022) and Cherry, Jiang, Matvos, Piskorski, and Seru (2022) as during the HAMP.). In addition, debt forbearance during the pandemic may have had positive local spillovers that allowed other households to refinance during the crisis (Capponi, Jia, and Rios (2021) and it may also explain the observed reduction of Chapter 13 filings (Wang, Yang, Iverson, and Kluender (2020)).

find that, as in the United States and elsewhere in the world, only a small fraction of households decided to take advantage of this program. The subsequent assistance measures implemented by banks in September 2021 aimed to assist borrowers still in forbearance at the end of government program, but were similarly promoted and designed to reach any household who might face (self-reported) difficulties in making their mortgage payments. Overall, the debt forbearance (in conjunction with other government assistance programs) contributed to a low level of household debt delinquencies in Portugal.

Our identification of the effect of forbearance on consumption and savings relies on (1) the high frequency of the data (and thus the ability to identify sharp changes in behavior around the start of the pandemic); (2) the ability to control for changes in income, the main unobserved variable in similar studies; and (3) the validation that households were following similar trends for each outcome before the pandemic. Nevertheless, we are interested not only in the causal effect of the policies, but also in the selection of households into forbearance as in [Cherry, Jiang, Matvos, Piskorski, and Seru \(2021\)](#). Thus, our estimates of the effects of both the government program and the additional assistance by banks should be interpreted as the causal effect of mortgage forbearance on the outcomes of the set of households who choose to suspend mortgage repayments, i.e., the treatment group; the control group includes otherwise similar households who choose not to suspend repayments.

Individuals who suffered a sharp drop in income in March and April of 2020 were more likely to enter mortgage forbearance. Even before the pandemic, however, households in forbearance had lower income and lower wealth, so the forbearance (treatment) group is more financially fragile than the control on average, which is consistent with the experience in the United States ([Cherry, Jiang, Matvos, Piskorski, and Seru \(2021\)](#) and [Gerardi, Lambie-Hanson, Willen, et al. \(2022\)](#)). Households in forbearance made up for the lost wages in the first few months of the pandemic primarily through government transfers, but wages recovered to some extent still during the first year of the pandemic. While households in forbearance had lower income both before and after the pandemic than those who never entered forbearance, and their wages took longer to recover, their *total* income (including government transfers)

was not significantly affected over our sample period.

Despite the drop in wages, the forbearance group increased monthly consumption expenditure relative to the control group starting in the summer of 2020, and this gap in monthly consumption of about 15% of the pre-period level persisted through the end of the government forbearance programs in September 2021. We also find that forbearance is associated with increased savings and, given the average low level of savings of individuals who received forbearance, the differential increase in average savings balance is substantial at over to 60% 12 months after repayments were suspended. We also estimate the differential increase in consumption and savings per euro of postponed payments—that is, the marginal propensity to consume and save. We find that households in forbearance increased spending by 25 cents and savings by 40 cents per euro relative to households without forbearance.

The average response by households masks substantial heterogeneity by income and wealth before the pandemic. In order to investigate this heterogeneity, we split the sample at the median of assets held in the bank (checking and savings accounts) and at the median of total income before the beginning of the pandemic. We find that households in the low-asset and low-income groups increased consumption by about 74 cents per euro of postponed payments shortly after the start of the pandemic. This increase persisted until the end of forbearance, corresponding to a higher consumption level than these same households had before the pandemic. In contrast, there was no increase in spending among high-asset and high-income households. These results are consistent with [Baker, Farrokhnia, Meyer, Pagel, and Yannelis \(2020\)](#) for the effects of the COVID-19 stimulus package by income level, as well as previous work using other shocks to household income (see, for example, [Hall and Mishkin \(1980\)](#), [Zeldes \(1989\)](#), [Johnson, Parker, and Souleles \(2006\)](#), [Kaplan, Violante, and Weidner \(2014\)](#), and [Di Maggio, Kermani, Keys, Piskorski, Ramcharan, Seru, and Yao \(2017\)](#)). [Ganong, Jones, Noel, Greig, Farrell, and Wheat \(2020\)](#) show that both income and liquid wealth matter for the sensitivity of consumption to income shocks, which is also consistent with our evidence.

We find that savings follow a different trend in the cross-section of households from

consumption. While the low-income and low-asset groups did not save anything out of their postponed repayment, the high-income and high-asset groups saved as much as 79 cents per euro. In fact, we cannot reject the hypothesis that the high income and high-asset group saved *all* of the postponed installment, which raise the question of whether there was need for a mortgage moratorium for this group.

Unique to our setting is the fact that banks (at the urging of the regulator) in September 2021 offered additional debt relief in the form of reduced or suspended payments (i.e., loan maturity extensions, interest rate reductions or additional forbearance) for households who had been in forbearance during the previous 18 months and who might need additional support. As with the government moratoria, the bank had an explicit mandate to err on the side of offering additional assistance to any household who *might* need additional help, rather than restricting the measures to the most distressed borrowers. This included an effort to contact all borrowers in forbearance to assess their need for help.

Interestingly, and consistent with the government forbearance, only a small group of households who had entered forbearance in the first half of 2020 choose to take up an additional measure in September of 2021. We show that the group of households who took the additional measures had saved less during the first forbearance period, but still had a large increase in consumption during that same period. The increase in consumption relative to the pre-pandemic period persisted after the start of the additional measures. In contrast, the group of borrowers who exited forbearance in September 2021 both consumed more and built up additional savings during the initial forbearance period. After the end of forbearance, this group reduced consumption to a level closer to that before the pandemic, but still above the pre-pandemic level, suggesting that the increased consumption was somewhat rigid and did not fully adjust downward ([Chetty and Szeidl \(2007\)](#), [Chetty and Szeidl \(2016\)](#)).

Our paper adds to the literature on the effects of government and private debt relief programs. This literature focuses on information and institutional frictions, the effects of loan modifications on delinquency and consumption, and optimal policy design. In research

that is directly relevant for understanding the optimality of short-term forbearance programs, as well as the selection into these programs, [Eberly and Krishnamurthy \(2014\)](#) develop a framework for assessing and designing efficient mortgage modification programs. They show that a program with temporary payment reduction during a crisis is a cheaper alternative than principal forgiveness when borrowers are liquidity-constrained. Using a randomized trial that compares commonly employed debt relief measures, [Aydin \(2021\)](#) finds that forbearance is more effective when applied to constrained households or late-cycle delinquencies. At the same time, lenders may find it optimal to perform principal reductions to reduce the incentive of borrowers to default – although the *announcement* of such a program can itself lead to strategic defaults ([Mayer, Morrison, Piskorski, and Gupta \(2014\)](#)). Recently there has been intense debate of the effects of student loan forgiveness programs, including its redistribution effects and how borrowers substitute between public and private debt sources ([Catherine and Yannelis \(2023\)](#) and [Dinerstein, Yannelis, and Chen \(2022\)](#)).

Our paper is also related to the literature on the consumption response to the COVID-19 pandemic. The majority of this literature focuses on the effects of (one-time or repeated) transfers rather than debt forbearance. [Baker, Farrokhnia, Meyer, Pagel, and Yannelis \(2020\)](#) studies the consumption response of households at different income levels and with different shocks to income around the onset of the pandemic and as a function of shelter-in-place orders. [Ganong, Greig, Noel, Sullivan, and Vavra \(2022\)](#) show that unemployment benefits introduced during the height of the crisis impacted spending, but less so employment dynamics. Recent work also shows that the pandemic had heterogeneous effects on workers in different countries ([Adams-Prassl, Boneva, Golin, and Rauh \(2020\)](#)) and occupations ([Barrero, Bloom, and Davis \(2020\)](#)). [Cherry, Jiang, Matvos, Piskorski, and Seru \(2022\)](#) show how shadow banks affected the debt relief pass-through in the United States, exhibiting persistently lower forbearance rates than traditional lenders.

2 Institutional Details

At the outbreak of the COVID-19 pandemic, governments and financial institutions worldwide issued legislative and non-legislative moratoria on loan payments, targeting households and non-financial corporations.³ By the end of March 2020, just a week after the State of Emergency was declared and a national lockdown imposed, the Portuguese government mandated a debt forbearance program, suspending principal and interest payments for certain types of loans, upon eligible borrowers' applications. By then, the scope of the measure was rather restrictive, only including mortgage loans for the acquisition of owner-occupied properties. The eligibility criteria for this initial government measure also restricted forbearance to individuals who were not delinquent at the time (defined as having payments 90 days past due), nor had outstanding tax or social security debt. Moreover, access was limited to individuals (1) in self-isolation or providing assistance to a family member; (2) working in companies that reduced work hours due to the pandemic and requested paycheck assistance (the “layoff” regime); (3) unemployed; (4) eligible for financial support for self-employed; or (5) employed in activities facing closures during the state of emergency period. If individuals satisfied one of these criteria, they could request the delay of loan payments for six months, until September 2020.

By April 2020, an inter-bank agreement led to a complementary and non-legislative moratoria, expanding the set of loans eligible for forbearance by including other mortgage loans but also personal and auto loans. The government also soon broadened the legislative moratoria and by mid-June the measure was made available to all individuals reporting a 20% drop in income due to the pandemic shock. At the same time, changes were made to the legislative program in order to include all types of mortgage loans for residential property and student loans. As a result of this change, loans in forbearance as a percentage of the total number of loans increased from around 13% in April to 18% in June, and then stabilizing until 2021. In addition, as a consequence of these amendments, the suspension of

³Figure 1 provides an overview of the main events related to the Portuguese government response to the pandemic, highlighting the debt forbearance program.

loan payments was extended until the end of March 2021, which would later be further extended until September 2021, or 18 months after the forbearance was first implemented.

During 2021, concerns over households' ability to resume payments led however to new regulatory guidelines on the prevention and management of arrears, demanding a more proactive role for banks. Apart from closely monitoring borrowers, banks would contribute to the prevention of arrears through renegotiation or restructuring of loans. Therefore, banks would have to offer adequate measures to individuals at risk of defaulting. The exact nature of such measures were left at the banks' discretion and could include, as suggested by policy makers, loan maturity extensions, interest rate reductions or additional forbearance; nonetheless, only a small number of borrowers took advantage of this possibility.

3 Data

Our data come from account-level transactions provided by a leading Portuguese bank. We perform several screens on the raw sample of bank customers. We start by only considering clients who have an outstanding mortgage loan with the bank. Using this sample, we group clients that share a mortgage and checking accounts to define a household. Moreover, in order to identify households using this particular bank as their primary bank, we focus on households who simultaneously satisfy the following criteria: (1) at least one member of the household chose direct deposit of wages, pensions or social security benefits⁴; and (2) at least one member of the household regularly uses debit and credit cards held at the bank for purchases and payments (at least an average of ten transactions per month). The final sample covers about 140 thousand households between January 2018 and June 2022.

Our data include transactions of checking and savings accounts, as well as purchases and payments from debit or credit cards, including cash withdrawals. Given that our sample is composed of households with direct deposit of wages, pensions and other social security benefits, we are able to estimate monthly household income using checking account transfers.

⁴Households are offered a reduction in the interest rate spread if they choose to have wages and pensions deposited directly at the bank.

Thus, we can track income even if individuals change jobs or become unemployed. We can categorize the type of income according to these three categories, but due to the anonymized nature of the data we are unable to identify the employer.

Despite its granularity and completeness, the data on wages and pensions only provides a lower bound on household monthly income, since other sources of income may not be included. For example, rents or self-employment income would not be captured. Moreover, since we only require one member of the household to have chosen wage direct deposit, we may fail to capture a fraction of the household wage income. For this reason, we complement this data with third-party transfers—Single Euro Payments Area (SEPA) transfers, which include incoming transfers such as within-household transfers from other banks, tax refunds or rental income, and also outgoing transfers issued by a third-party, such as automatic payments of utilities and other services.

In addition, we are able to categorize purchases starting in January 2020. For this period, we are able to categorize most transactions by relying on point-of-sale terminal information, namely, the reported Merchant Category Code (MCC), which classifies merchants into categories based on the type of business, and the reported industry code, according to *Classificação das Actividades Económicas* (CAE) Revision 3.

The household balance sheet data include end-of-the-month balances for all checking and saving accounts held at the bank, as well as balances for all liabilities, including mortgages, personal loans, auto loans, credit card and overdraft. The data also include additional information for liabilities, including interest rate (as of August 2021), date of origination, maturity and monthly installment before the pandemic.

We merge internal information of the bank with data from the Credit Register (*Central Credit Responsibilities*), managed by Banco de Portugal, and thus we obtain outstanding loans from other banks for each household. By matching these databases, we can fully track the liability side of the household balance sheet over the sample period as well as delinquency. While we have daily information on loan-level delinquency for all contracts held with this particular bank, we can observe end-of-the-month overdue debt in other banks using the

Credit Register.

3.1 Summary Statistics

Table 1 shows summary statistics for our sample of households. Households are made-up of 1.7 individuals, on average. Households carry an average checking account balance of 6.7 thousand euros and an average saving account balance of 17.3 thousand euros (conditional on having a savings account); the median balances are significantly lower at 2 thousand euros and 5.7 thousand euros, respectively. Mortgage balances are, on average, 69 thousand euros, substantially lower than the average in the United States. The table also shows summary statistics on the balances of all other asset and liability accounts in the data, including credit cards, auto loans, and other bank loans. Almost all clients have a credit card or an overdraft, holding an average balance of about 420 euros. In contrast, only about 1% of households in our sample hold student and auto loans, and 7% hold other type of loan such as personal loans. The average balance on these loans, conditional on holding such type of debt, is 6.9 thousand euros and 6.5 thousand euros, respectively. Finally, most households in our sample have loans with other banks, with an outstanding balance of about 7.5 thousand euros on average.

Total income is about 1,800 euros per month, and includes wage income, retirement income (for 40 thousand of the 138 thousand households in the sample), as well as social security transfers. We also create a broader measure of income to capture any sources of non-wage income (Total income with transfers), which includes rents, business or professional income. This broader measure of income is, on average, 2,522, and the 90th percentile in our sample is approximately 4,650 per month. This average income is higher than the after-tax average household monthly income in the country which in 2019 amounted to 1,800.⁵ We note that our sample selection may play a role explaining this difference, including the fact that our sample is solely composed by mortgage lenders. The group of homeowners with mortgage

⁵Annual mean net income per household (€) by Deciles of income; INE - *Instituto Nacional de Estatística*, Statistics on income and living conditions

comprised around 30% of all households in 2021,⁶, with its median income being substantially higher (at least 25%) than the remaining households, per adult equivalent (Xerez, Pereira, and Cardoso, 2019).

Our measure of consumption includes any purchases or payments using debit or credit cards, as well as cash withdrawals, using data from point-of-sale or terminal transactions.⁷ Average household consumption is about 1,500 euros per month from 39 monthly transactions per household (including cash withdrawals) on average. This figure compares with an average consumption expenditure per household of around 1,560 in the country,⁸. Our consumption measures should be seen as a lower bound on total consumption as we only observe payments within a bank. Additionally, some expenditure items, such as utilities, may be captured by direct debit, which amounts to 331 euros per month for the average household.

The average mortgage payment, including principal and interest, is 316 euros, higher than the country's average by the end of 2019 (248).⁹ Moreover, considering the broader income measure, we estimate an average debt service-to-income (DTI) of about 19% in 2019, slightly above the country's average in 2022 (17%).¹⁰ Finally, delinquency is infrequent in our sample, with just 1% of households having payments more than 30 days past due throughout 2019. We note that the low delinquency rates on loan contracts observed in our sample may be a consequence of the sample selection criteria (i.e., by only considering households with wage direct deposit).

We also examine whether selection plays an important role in applications for the government forbearance program at the beginning of the pandemic. Table 2 compares the pre-pandemic (as of December 2019) average characteristics of treated and control groups. We find significant differences in households pre-pandemic characteristics between treated

⁶INE, Population and housing census 2021.

⁷Including cash withdrawals is crucial for measuring consumption accurately, as a significant fraction of retail transactions in Portugal (and across Europe) are still done in cash during this period. According to the 2022 study on the payment attitudes of consumers in the euro area (SPACE) conducted by the European Central Bank, 64% of in-person retail transactions are done in cash in Portugal, as opposed to 31% by card and 5% by other means.

⁸Estimate for 2015, excluding actual or imputed rentals for housing (Peralta, Carvalho, and Esteves, 2021)

⁹January 19, 2022 Press Release, INE: Interest rates implied in housing loans.

¹⁰Banco de Portugal, Relatório de Estabilidade Financeira, Nov. 2022.

and control groups. Households who selected into forbearance had lower average monthly income and lower average assets (as measured by their end-of-the-month checking and saving accounts balance as of 2019). In addition, they were more indebted as indicated by higher average mortgage debt, higher dependence on the use of credit card and checking account overdraft, and higher DTI.

4 Empirical Methodology

We employ a difference-in-differences approach to compare the outcomes (consumption and wealth) between households receiving forbearance (the treatment group) and other households not receiving forbearance (the control group) before and after the start of the forbearance program. We estimate the changes in consumption and assets around the start of the pandemic and forbearance using the following regression:

$$y_{i,t} = \sum_{\tau=-29}^{28} \delta_\tau Forbearance_i + X_{i,t} + \mu_{i,m} + \lambda_t + \varepsilon_{i,t}, \quad (1)$$

where $y_{i,t}$ is either the logarithm of monthly consumption expenditure or the balance of checking and savings accounts (end-of-month assets) for household i at time t . $Forbearance_i$ is a dummy variable that takes the value of one for households receiving forbearance and zero otherwise. We estimate the dynamic effect of the forbearance from 29 months before to 29 after the beginning of the forbearance (which can vary between March and June of 2020); the coefficients of interest are δ_τ , which measure the change in consumption or savings due to postponed mortgage payments. $X_{i,t}$ is a set of household-level time-varying controls like monthly income and inbound transfers, changes in credit card and overdraft balance, and monthly direct withdrawals. The regressions also include either household fixed effects (μ_i) to account for time-invariant household heterogeneity or household-by-month fixed effects ($\mu_{i,m}$) to also account for differences in household-specific monthly seasonality effects. All the regressions include month-by-year fixed effect (λ_t) to absorb shocks that may affect all households. In some specifications, we

include municipality-month-year fixed effects to account for regional shocks. Standard errors are clustered two-way at the household and calendar date level.

To estimate the monthly changes in consumption and assets per euro of postponed payments, we estimate the following regression:

$$y_{i,t} = \sum_{\tau=-29}^{28} \delta_{\tau} Forbearance\ Amount_{i,t} + X_{i,t} + \mu_{i,m} + \lambda_t + \varepsilon_{i,t}, \quad (2)$$

where $Forbearance\ Amount_{i,t}$ is the amount of postponed debt payments (mostly mortgages but it may include other loans for some households) for household i in month t ; it takes the value of zero before the start of the forbearance for all households, as well as after the start of the forbearance (which can vary between March and June of 2020) for households not receiving forbearance.

Finally, to estimate the average effect on monthly changes in consumption and assets during the full policy period, we consider the following regression:

$$y_{i,t} = \delta Forbearance_i + X_{i,t} + \mu_{i,m} + \lambda_t + \varepsilon_{i,t}, \quad (3)$$

where the coefficient of interest δ measures the average effect on consumption and assets during the full forbearance period (which can be at most 18 months). Alternatively, we also consider the amount of postponed debt payments, $Forbearance\ Amount_{i,t}$, as the main explanatory variable. Thus, in the latter specification, the estimate for δ can be interpreted as the average effect per euro of postponed payments, or the fraction of postponed payments that was allocated to consumption and savings.

5 Effect of Debt Forbearance

In this section, we show the evolution of income, consumption and saving before and after the government debt forbearance program that started in March 2020.

5.1 Evolution of Income

Figure 2 shows the average, consumption and savings between January 2019 and June 2022 for two groups of households: (1) the group that consists of households that did not receive forbearance, which serves as the control group; (2) the group that consists of all households receiving forbearance (treatment group), regardless of whether they received additional bank assistance in September 2021. For all outcome variables we plot seasonally-adjusted coefficients for each month δ_τ as in equation (1).

Panel A shows the evolution of income (per month) in euros before and after the debt forbearance for households in treatment group and control group. Panel A of Figure 2 shows that forbearance recipients were more exposed to the COVID-19 shock, losing about 130 euros of monthly wages, on average, at the onset of the pandemic, compared with about 80 euros for the control group. Notice that the treatment group had lower average wages to start with, as shown in Table 2). Interestingly, the gap in wages is temporary and disappears by the third quarter of 2021.

Panel B shows the evolution of social security transfers (i.e., unemployment insurance, pensions) that disproportionately benefited the treatment group versus the control group since the onset of the pandemic. This gap seems to persist until 2022. Panel C shows the evolution of total income including both wages and government transfers. The figure suggests that income supplements and other government transfers were sufficient to stabilize total income for treated versus control households. The total income of households in forbearance do not deviate significantly from that of the control group. This is explained by the large increase in government transfers during the pandemic that we describe in Section 2, as shown in Panel B. Taken together, Figure 2 suggests that households who received forbearance were more exposed to COVID-related wage shocks (Panel A), received larger income supplements from the government during this period (Panel B), and ended up with similar income trends as households who did not enter forbearance (Panel C).

Figure IA.1 of the Internet Appendix shows the evolution of income separately for households receiving forbearance until September of 2021 but no subsequent measures (the

“Forbearance and No Measure” group), and households receiving forbearance until September of 2021 and applied for additional measures put in place by the bank (i.e., loan maturity extension, interest rate reductions or additional repayment forbearance) in September of 2021 (the “Forbearance and Measure” group). Panel A shows that households who asked for additional measures in September of 2021 had lower wages by 50 to 100 euros starting at the onset of the pandemic, which persisted until 2022. Households who did not ask for additional measures recovered income quickly and were back to pre-pandemic levels by the end of 2020. The government transfers shown in Panel B were not enough to fully offset the drop in wages of the “Forbearance and Measure” group; Panel C shows that the gap in total income persists through the end of our sample.

5.2 Evolution of Consumption, Assets and Liabilities

Figure 3 shows the evolution of the average consumption separately for the treatment and control groups. We find that both groups of households cut spending right after the start of the pandemic in March 2020, but we find a statistically significant positive effect on consumption by individuals in forbearance relative to the control group of close to 200 euros per month by the summer of 2020. Interestingly, the changes in consumption for households in forbearance result in a significantly higher average monthly consumption even compared to pre-pandemic levels. This is particularly noteworthy given that the total monthly income (see Table 2 and Figure IA.1) was *not* higher for the treatment group relative to the control group.¹¹

Table IA.2 in the Internet Appendix shows the evolution of consumption separately for the households in forbearance who received and did not receive additional measures in September of 2021. The “Forbearance and No Measure” group benefits from a large jump in consumption that results in a significant gap relative to the control group that persists throughout the sample period. In contrast, the “Forbearance and Measure” group shows a evolution similar to the “No Forbearance” group (control group), but consuming more than in the pre-pandemic

¹¹The plots show the evolution of consumption using equal-weights among households. Table IA.1 shows that that the value-weighted evolution of consumption in our sample closely matches the evolution of consumption in Portugal for this period.

period.

Figure 4 shows the evolution of the average household's assets held in the bank (checking and savings accounts end-of-month balances) and liabilities (credit card and overdraft and debt in other banks end-of-month balances). Panel A shows that the beginning of the pandemic is associated with a slower growth in checking account balances of households in forbearance. As Figure IA.3 in the Internet Appendix shows, this is especially the case for those households who would later ask for additional measures. By mid-2020, and even more so by early 2021, households in forbearance start accumulating balances in both their checking and savings accounts (and more quickly so than the control group, as we discuss below). When we again consider both subgroups in forbearance in Figure IA.3, we find that the “additional measure” group lag behind those in the “no additional measure” group throughout the sample period.

When we turn to liabilities, Panel A of Figure 5 shows that households in forbearance decreased credit card balances by more than the control group throughout the whole pandemic period, but does not show such a clear differential reduction in debt in other banks (Panel B). In fact, Figure IA.4 in the Internet Appendix shows that, if anything, the “additional measure” group seems to have accumulated additional debt in other banks by the end of our sample period.

5.3 Effect of Debt Forbearance on Consumption and Savings

We now estimate the effect of the government forbearance program initiated in March 2020 on household consumption and savings using the regression in equation (1).

Figure 6 compares the effect of the forbearance on treated and control groups consumption (Panel A) and total assets (Panel B) from 12 months before the start of the forbearance program (March 2020) up to 12 months after; we plot the estimates of the (δ_τ) coefficient that measure the difference between treatment and control groups (relative to February 2020). While there are significant average differences in the characteristics of the two groups (see Table 2), Panel A shows that treatment and control groups exhibit similar

trends in consumption in the year preceding the beginning of the forbearance. In addition, we find a positive and significant effect immediately after the forbearance with a differential effect between treatment and control groups at about 15% as of 12 months after the start of the forbearance.

Panel B shows no evidence of pre-existing differential trends in savings between treatment and control groups up to the month before the start of the forbearance; this is consistent with the differential wage drop in Figure 2. We find that a strong positive differential effect between treatment and control groups at about 60% as of 12 months after the start of the forbearance. We conclude that households receiving forbearance exhibit a more favorable evolution in consumption and savings than households not receiving forbearance. The effects is more pronounced in savings than in consumption.

Tables 3 and 4 show the average treatment effects for consumption and assets using the regression in equation (1), but using only a “Post” dummy instead of monthly indicators. Columns (1)-(4) show the estimates with household and month-by-year fixed effects with different sets of controls. Columns (4)-(6) include household-by-calendar month fixed effects.

Table 3 shows that the forbearance effect on consumption is positive and significant across all specifications at about 14-15%. This represents about 225 euros of the average consumption of the forbearance group. Table 4 shows that the forbearance effect on savings and checking accounts balances is of similar magnitude to that on consumption at about 13-15%. We note, however, that the savings regression is a stock variable (the logarithm of assets), and that the differential increase in savings is significantly larger at about 60% as of 12 months after the forbearance (relative to one month before), as shown in Panel B of Figure 6.

The point estimate of the “Forbearance x Post” variable does not change when the regressions include household-level income, credit card and overdraft balances, and direct withdrawals as controls. As expected, the control variables have positive and significant coefficients in the consumption regressions. In the savings regressions, income and direct withdrawals have a positive coefficient, while credit card and overdraft balances have a negative coefficient.

5.4 Propensity to Consume and Save

In this section, we estimate the propensity to consume and save out of the postponed mortgage payments due to the government forbearance program started in March 2020. We estimate the regression in equation (2) where the treatment indicator $D_{i,\tau}$ is interacted with the amount of delayed payments ($F_{i,t}$).

Panels A and B in Figure 7 show the estimated coefficients of average propensity to consume and save for the 12 months before and the 12 months after the start of the forbearance, respectively, which allow us to examine the dynamics of the effect. There are no evidence of preexisting differential trends in both consumption and savings between treatment and control groups. After the start of the forbearance, we find that a positive and significant effect on the propensity to consume and propensity to save. Panel A shows that households consumed more than 20 cents per euro of postponed payment as of 12 months after the start of the program. In addition, Panel B shows that households saved as much as 70 cents per euro of postponed payment as of 12 months after the start of the program.

Tables 5 and 6 show the estimates of the marginal propensity to consume and save out of the postponed mortgage payments. The regressions include the same fixed effects as in Tables 3 and 4. We find that households consume about 22-26 cents per euro of postponed payments. In addition, we find that households save as much as 42 cents per euro of postponed payments. Overall, the results suggest that households consumed and saved a significant fraction of the postponed payments. The effect seems to be more pronounced for savings than consumption.

5.5 Heterogeneous Responses

In this section, we investigate the extent to which the propensity to consume or save out of deferred mortgage payments is heterogeneous across different groups of households. We estimate the regression in equation (2) including interactions of our treatment variable with indicators that alternative measures of household financial constraints. We focus primarily on splits at the median of income and total assets (checking and savings accounts), although

we also consider the variation in income at the beginning of the pandemic, age and debt-to-income.

Figures 8 and 9 show the estimated coefficients of average propensity to consume and save for the 12 months before and the 12 months after the start of the forbearance, respectively. In particular, both figures show two-way splits of individuals at the median of income and total assets (savings and checking account balances). These figures show very heterogeneous responses to debt relief across households with different levels of pre-pandemic assets and income. The consumption response is concentrated primarily in low assets households and even more so in the low assets and low income group). The consumption response is about 40 cents per euro of postponed payments 12-month after the start of the forbearance. In contrast, the savings response is concentrated in the high assets and, more sharply for those in the high assets and high income group. The savings response is almost 90 cents per euro of postponed payments 12-month after the start of the forbearance.

Table 7 provides evidence that the response of consumption is very heterogeneous across different groups based on wealth and income. Columns (1) and (2) use income and assets as proxies for financial constraints, and column (3) uses the interaction of these two variables. Columns (4) and (5) add an additional interaction with a dummy for the relative *change* in income and wages, respectively, in March through May of 2020 relative to the same period in the previous year. In all cases, we find that the estimates of the marginal propensity to consume out of the forbearance are mostly driven by the most financially constrained households. For each euro of postponed payments, 53-74 cents were allocated to consumption by the more constrained households; this effect is more than the double of the average effect in Table 5. In contrast, the marginal propensity to consume for wealthier and high-income households, or those with more favorable income paths at the beginning of the pandemic, is close to zero.

Column (6) consider the consumption response across different age groups. We find that the marginal propensity to consume is significantly higher in the above-median age group but the effect is not economically significant. Column (6) shows that the consumption response

appears to be stronger by about 30 cents for households with higher levels of indebtedness as proxied by the debt-to-income (DTI) ratio.

Table 8 shows the response to the debt forbearance across different groups is different when we consider the marginal propensity to save. We find that wealthier and higher income individuals appear to mostly use the delayed payments to increase savings. Columns (1)-(5) show that the marginal propensity to save ranges between 60 and 80 cents per euro of delayed payments for the households with higher assets and high income groups as well those with more favorable evolution in wages and income during the pandemic. Columns (6) shows that the savings response is not statistically different across different age groups. Finally, column (7) shows that the savings response is strong at 88 cents per euro of postponed payments in the group with low DTI ratio. In contrast, there is an insignificant increase in the propensity to save out of delayed payments among the most financially fragile subgroups.

In sum, there are very heterogeneous responses to debt relief across households with different levels of wealth, income, and indebtedness. The consumption response is concentrated primarily in low wealth, low income and high indebtedness households. The savings response is concentrated in the high wealth, high income and low indebtedness households.

6 Effect of Additional Assistance Measures

During the summer of 2021 the bank assessed the level of risk of borrowers in forbearance and, for those deemed to be at somewhat higher risk of default at the end of the forbearance period, implemented a survey that determined whether they would qualify for additional assistance measures. In this section, we compare the evolution of consumption for households with and without additional assistance measures implemented by the bank in September of 2021.

Table 9 shows that consumption is affected by the end of forbearance, although the downward adjustment of consumption per euro of (expired) payment in forbearance is only about 25% relative to the period while the forbearance was in place. In fact, we find that

the average propensity to consume out of the monthly postponed payments was about 25-28 cents per euro, and this drops to approximately 21 cents after the forbearance expires. This is consistent with limited adjustment. Surprisingly, we do not find that households receiving additional assistance measures on the part of the bank changed their behavior (columns (2) and (4)). This is consistent with the “consumption commitments” model in [Chetty and Szeidl \(2007\)](#).

The results for savings differ markedly from those for consumption. In fact, we find that household savings behavior changes significantly after the forbearance ends, with savings returning to their pre-pandemic level. Table 10 shows that borrowers save zero cents per euro of the amount in (expired) forbearance, which contrasts with 20-40 cents during the forbearance period. Also unlike consumption, borrowers receiving additional assistance measures in September of 2021 saved a significant amount of these additional measures, as much as 50-90 cents per euro of additional forbearance. This suggests that, for the most part, the bank’s assistance may not have been necessary for avoiding delinquency for these households, despite the effort to assess needs using the internal models and surveys.

Table 11 shows the average propensity to spend by subcategories of consumption. We find that the increase in consumption is across categories, with groceries (column (1)), transport (5), restaurants (7), entertainment (8) and miscellaneous (9) as the most important ones.

7 Conclusion

The government debt relief programs during the COVID-19 pandemic provide a unique laboratory to measure how borrowers respond to preemptive interventions even before large scale defaults, which is different in nature to the interventions during the 2008-2009 foreclosure crisis. In this paper, we study the large debt moratorium programs put in place in Portugal during the pandemic. Using detailed bank account transaction-level data, we study how households consumption and savings respond to debt forbearance.

We find that debt forbearance during the pandemic had a large impact on both

consumption and savings. We find that households receiving forbearance increased spending by about 25 cents and savings by about 40 cents per euro of postponed payments relative to households not receiving forbearance. In addition, the response of consumption and savings was very heterogeneous across households with different levels of wealth and income. The average propensity to consume is significantly higher for households with low income and low wealth, while the average propensity to save is significantly higher for households with high wealth and high income.

Our finding of higher consumption and savings for households receiving forbearance relative to before the pandemic indicates that households may have been able to continue meeting mortgage payments. The same is true, even more so, for high income and high wealth individuals who saved a large fraction of their postponed payments. Taken together our evidence indicates that the burden of debt forbearance imposed on banks may not have been necessary given other contemporaneous government assistance programs.

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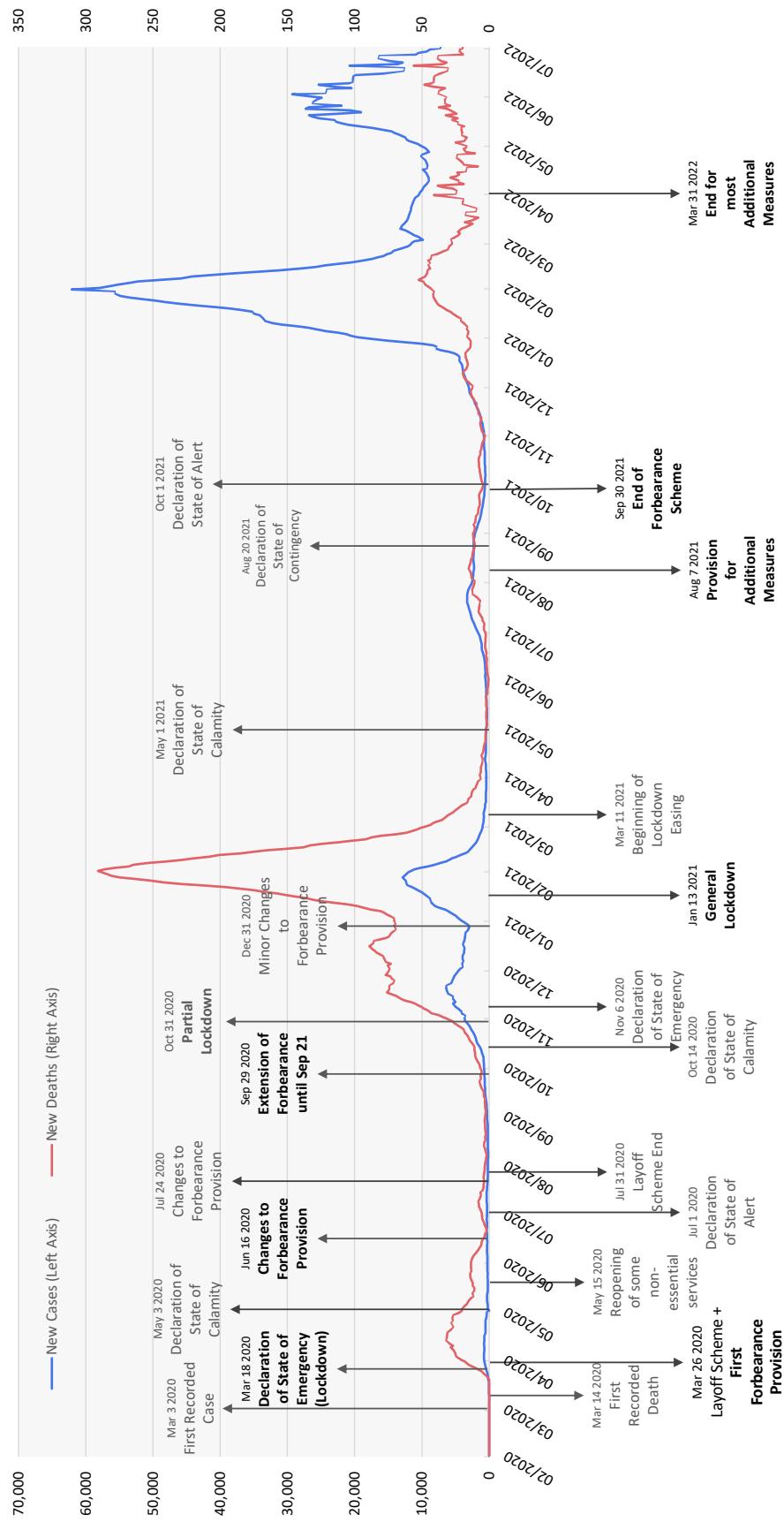
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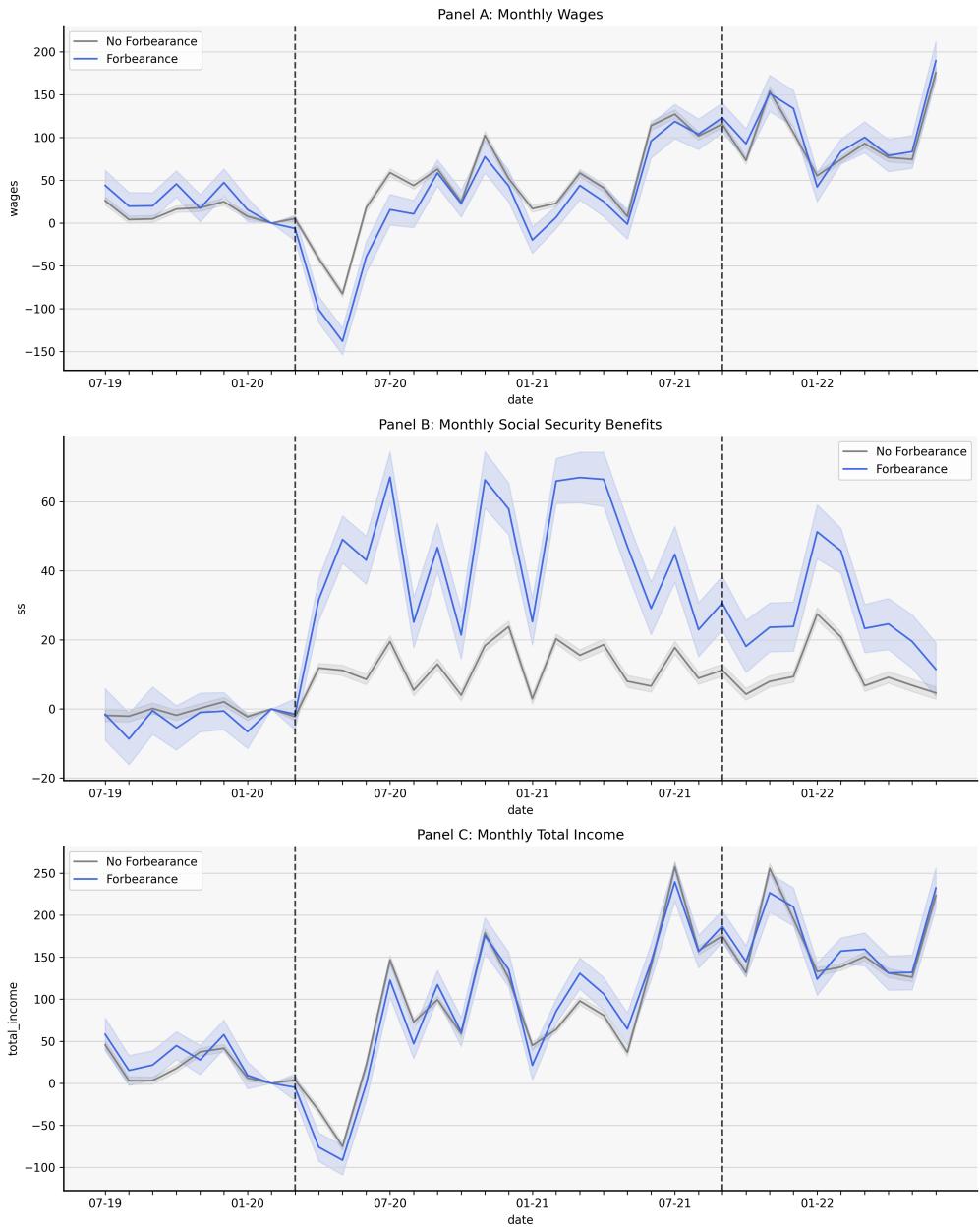
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Figure 1: Timeline of Events



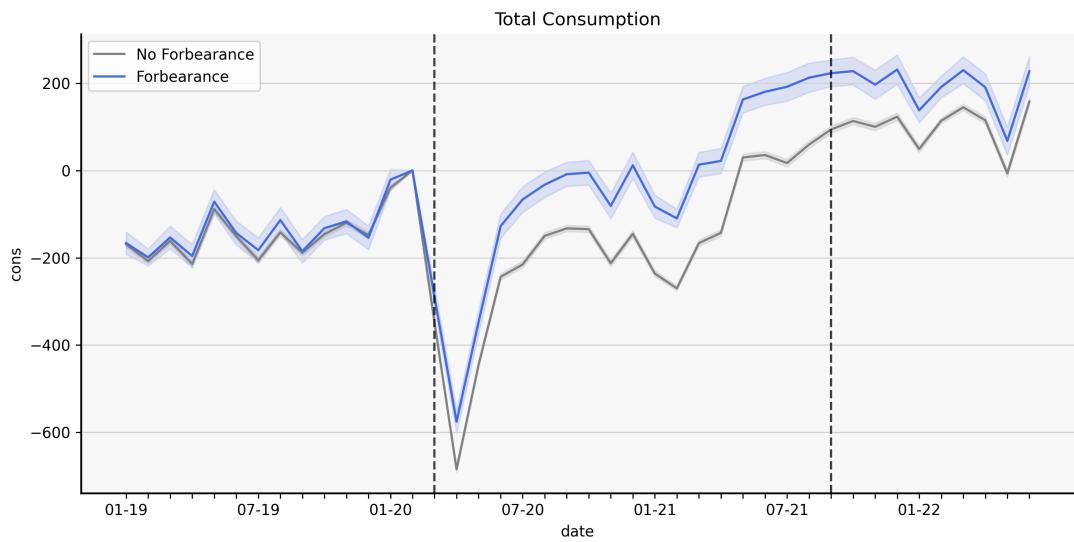
This figure shows the timeline of events, with key events being identified in bold, from February 2020 until July 2022. On the left axis and in blue we show the evolution of the number of new cases, while the right axis and in red we plot new deaths due to COVID-19.

Figure 2: Income Trends (Levels)



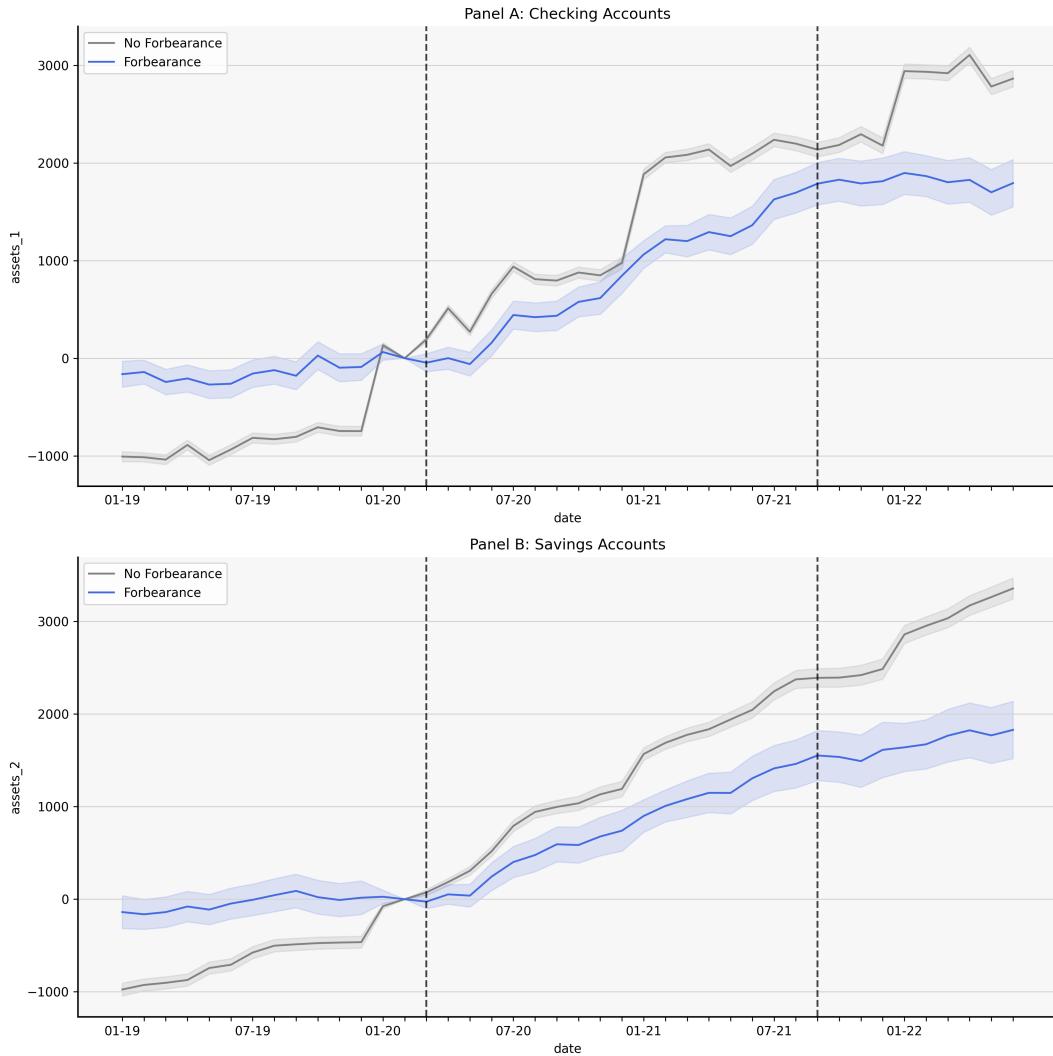
This figure plots the household average for different income sources, as well as the corresponding 95% confidence intervals, from July 2019 to June 2022. All measures are reported in euros, seasonally adjusted and relative to a prepandemic baseline (February, 2020). Panel A reports the average change in monthly direct deposit of wages relative to the prepandemic baseline, while Panel B shows the change in social security benefits received. Panel C shows the change in total monthly income relative to the baseline, computed as the sum between monthly wages, social security and retirement benefits. In all panels the average change is represented separately for households who received forbearance (in blue) and those who never entered forbearance (in grey). Standard errors are clustered at the household level.

Figure 3: Consumption Trends (Levels)



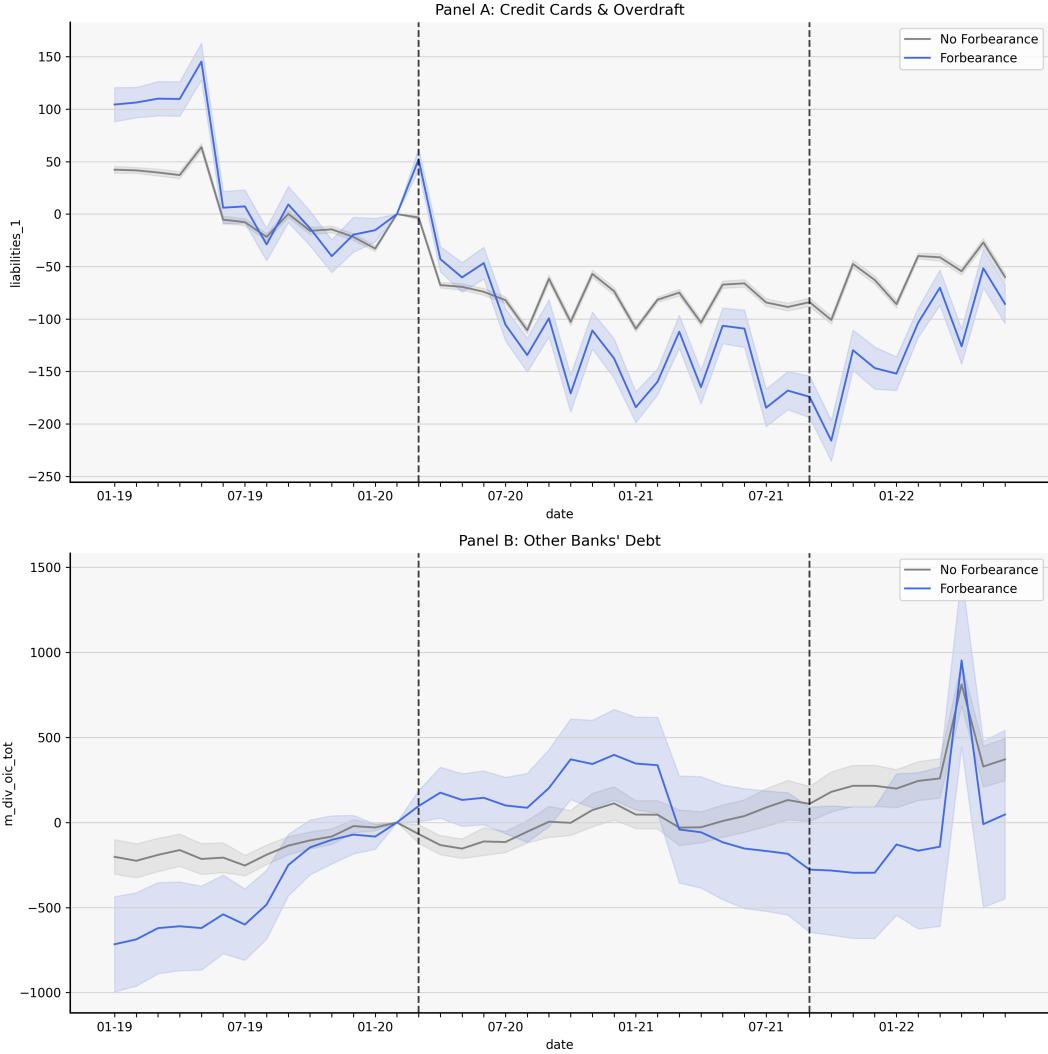
This figure plots the household average for monthly consumption, as well as the corresponding 95% confidence interval, from January 2019 to June 2022. Monthly consumption is computed as the sum between purchases and payments from either a debit or credit card at this bank. The measure is reported in euros, seasonally adjusted and relative to a pre-pandemic baseline (February, 2020), thus showing the average change in consumption relative to the baseline. This average change is represented separately for households who received forbearance (in blue) and those who never entered forbearance (in grey). Standard errors are clustered at the household level.

Figure 4: Balance Sheet Trends (Assets, in Levels)



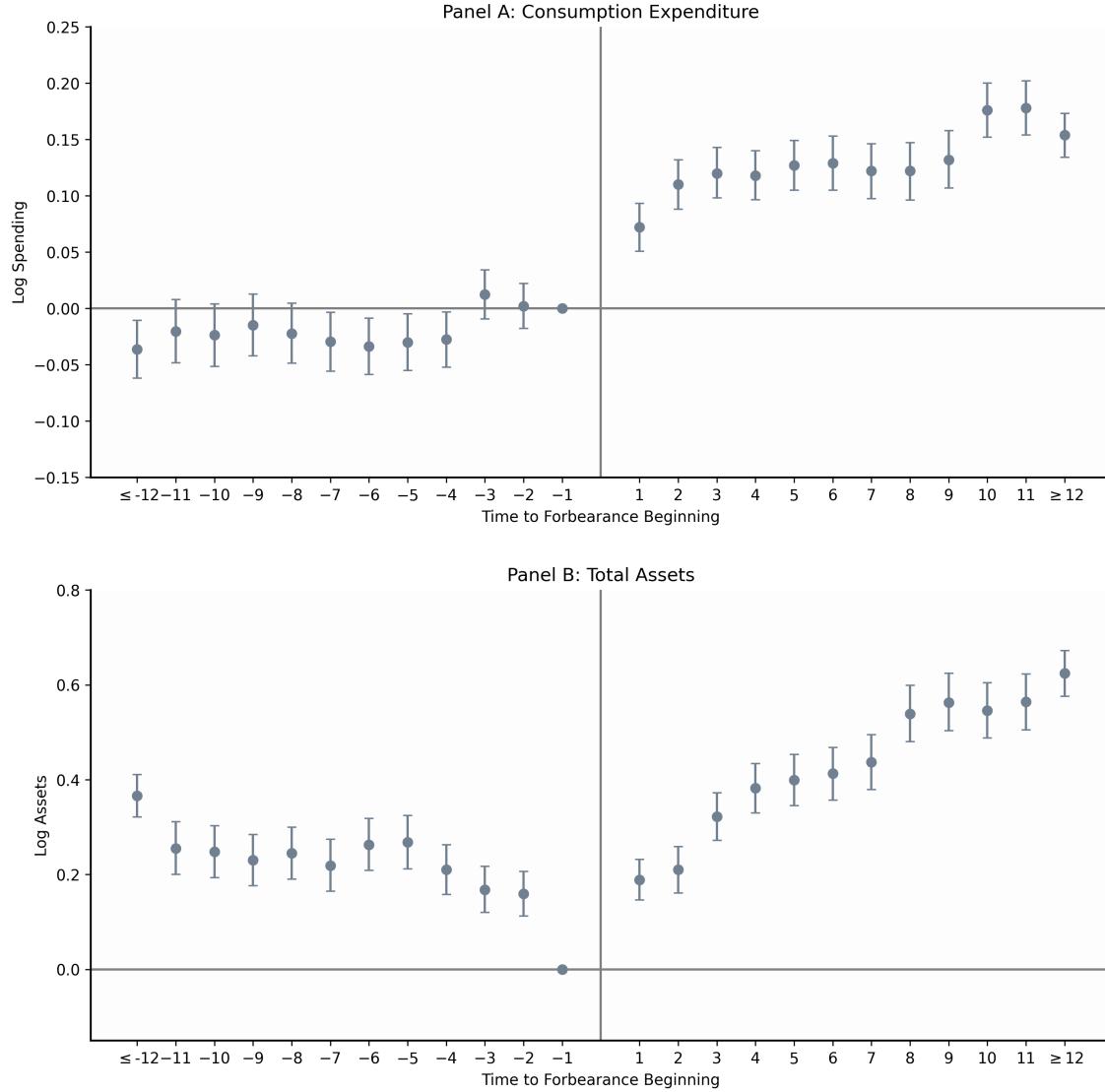
This figure plots the household average for different assets, as well as the corresponding 95% confidence intervals, from January 2019 to June 2022. All measures are reported in euros, seasonally adjusted and relative to a prepandemic baseline (February, 2020). Panel A reports the average change in the end-of-the-month checking account balance relative to the prepandemic baseline, while Panel B shows the change in the end-of-the-month balance in saving accounts. In both panels the average change is represented separately for households who received forbearance (in blue) and those who never entered forbearance (in grey). Standard errors are clustered at the household level.

Figure 5: Balance Sheet Trends (Liabilities, in Levels)



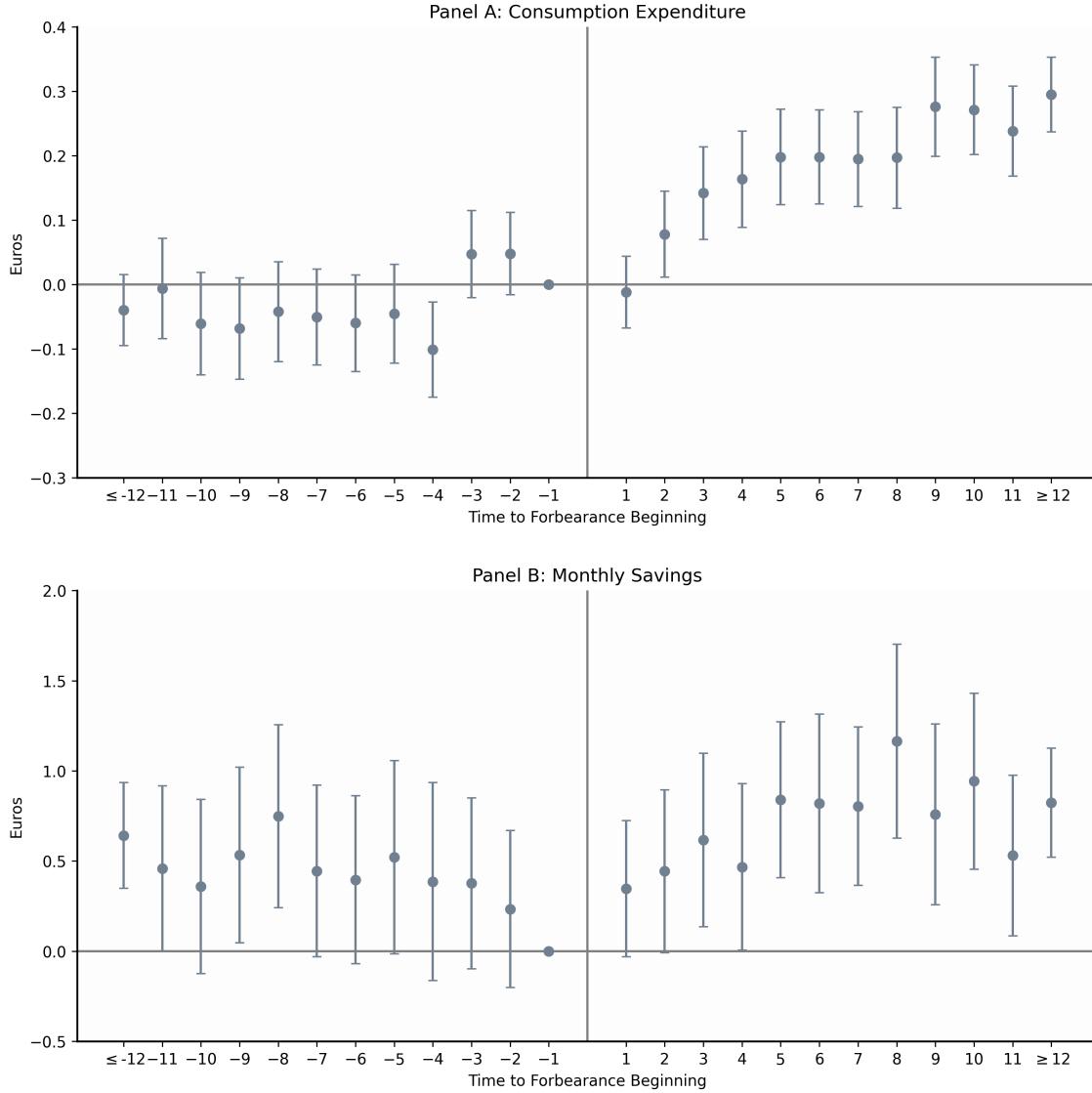
This figure plots the household average for different liabilities, as well as the corresponding 95% confidence intervals, from January 2019 to June 2022. All measures are reported in euros. Panel A reports the seasonally-adjusted average change in the end-of-the-month credit card and overdraft balance relative to the prepandemic baseline (February 2020), while Panel B shows the end-of-the-month balances for loans outstanding in other financial institutions. In both panels the average change is represented separately for households who received forbearance (in blue) and those who never entered forbearance (in grey). Standard errors are clustered at the household level.

Figure 6: Household Response in Consumption and Savings around Forbearance Start



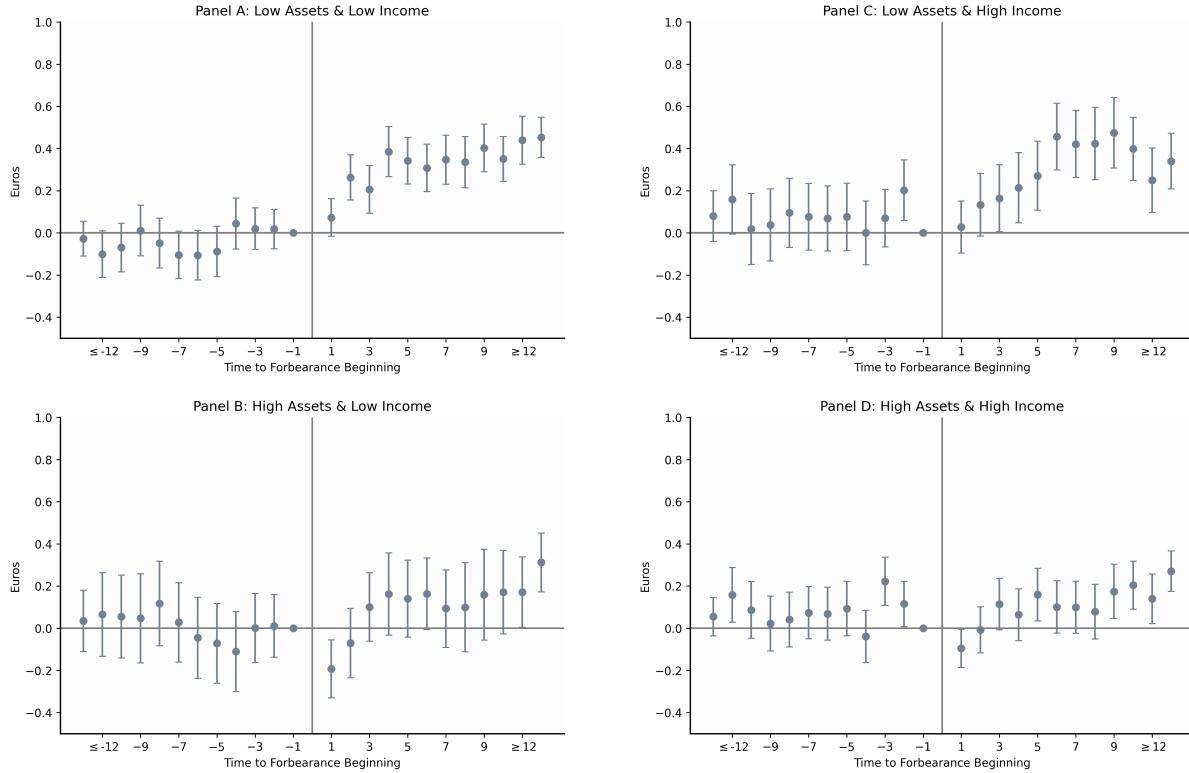
This figure plots the regression coefficients and 95% confidence intervals of the natural logarithm of monthly consumption and total assets, in Panel A and B, respectively, on month dummies around the start of the forbearance (which is household-specific). Both specifications follow the difference-in-differences model given by equation (1) and use the month prior to the start of forbearance as a baseline. In Panel A we show the estimates for the average percentage change on monthly spending, measured as the sum between purchases and payments from either a debit or credit card at this bank around the beginning of the forbearance measure. In Panel B we plot the average percentage change in total assets, measured as the sum between end-of-the-month checking and saving accounts' balances. This specification includes household by calendar month and calendar date fixed effects. Standard errors are computed using two-way clustering (household and calendar date level).

Figure 7: Marginal Propensity to Consume and Save



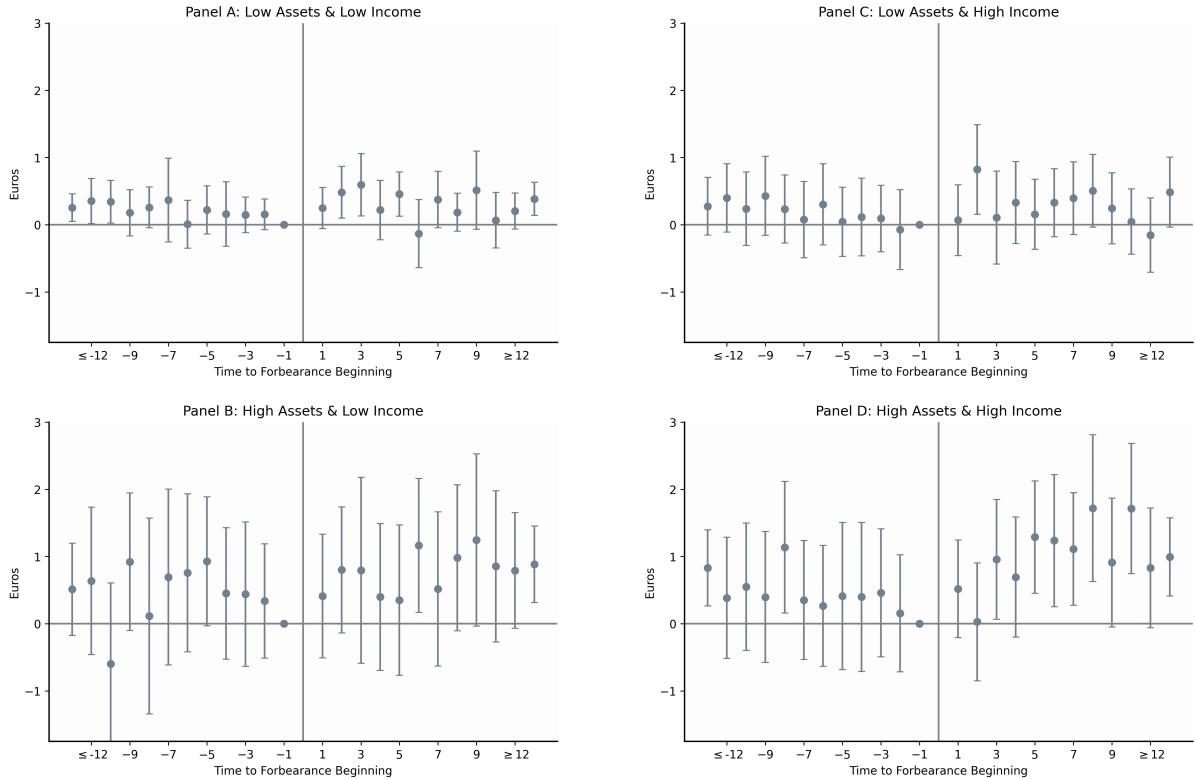
This figure plots the regression coefficients and 95% confidence intervals of i) monthly consumption and ii) monthly changes in total assets on month dummies around the start of the forbearance (which is household-specific). Both specifications follow the difference-in-differences model given by equation (1) and use the month prior to the start of forbearance as a baseline. The dependent variable in Panel A, monthly consumption, is measured as the sum between purchases and payments from either a debit or credit card at this bank. The dependent variable in Panel B, changes in total assets, is measured as monthly changes in the sum between end-of-the-month checking and saving accounts' balances. Month indicators are interacted with *Forb. Amount*, the amount of installment under the forbearance provision, providing an estimate for the marginal propensity to consume around the beginning of the forbearance measure. This specification includes household by calendar month and calendar date fixed effects. Standard errors are computed using two-way clustering (household and calendar date level).

Figure 8: Heterogeneous effects on the Marginal Propensity to Consume



This figure plots the regression coefficients and 95% confidence intervals of monthly consumption on month dummies around the start of the forbearance (which is household-specific). All panels consider below/above median subgroups, in relation to pre-pandemic assets and income (2019 averages) and follow the difference-in-differences model given by equation (1), using the month prior to the start of forbearance as a baseline. The dependent variable, monthly consumption, is measured as the sum between purchases and payments from either a debit or credit card at this bank. Month indicators are interacted with *Forb. Amount*, the amount of installment under the forbearance provision, providing an estimate for the marginal propensity to consume around the beginning of the forbearance measure. This specification includes household by calendar month and calendar date fixed effects. Standard errors are computed using two-way clustering (household and calendar date level).

Figure 9: Heterogeneous effects on the Marginal Propensity to Save



This figure plots the regression coefficients and 95% confidence intervals of monthly changes in total assets on month dummies around the start of the forbearance (which is household-specific). All panels consider below/above median subgroups, in relation to pre-pandemic assets and income (2019 averages) and follow the difference-in-differences model given by equation (1), using the month prior to the start of forbearance as a baseline. The dependent variable, changes in total assets, is measured as monthly changes in the sum between end-of-the-month checking and saving accounts' balances. Month indicators are interacted with *Forb. Amount*, the amount of installment under the forbearance provision, providing an estimate for the marginal propensity to consume around the beginning of the forbearance measure. This specification includes household by calendar month and calendar date fixed effects. Standard errors are computed using two-way clustering (household and calendar date level).

Table 1: Summary Statistics

Variable	N	Mean	SD	p10	p25	p50	p75	p90
HH Average Age	138,052	47.9	9.1	37.0	41.0	47.0	54.0	60.5
Household Size	138,052	1.7	0.5	1.0	1.0	2.0	2.0	2.0
Married	90,890	1.0	0.2	1.0	1.0	1.0	1.0	1.0
Checking Accounts (2019)	138,052	6,693.6	12,474.0	193.4	693.8	2,002.0	6,501.8	17,800.2
Saving Accounts (2019)	90,599	17,325.9	28,815.5	0.0	427.2	5,727.0	20,507.3	49,451.8
Credit Cards and Overdraft (2019)	138,016	421.6	786.6	0.0	0.0	88.3	476.3	1,230.2
Auto, Student and Educ. Loans (2019)	1,882	6,903.7	5,371.1	1,038.2	2,762.2	5,683.3	9,756.5	14,512.8
Home Mortgage Loans (2019)	138,052	69,463.4	52,068.6	15,211.6	30,819.3	57,369.6	95,261.8	137,491.4
Other Loans (2019)	10,062	6,500.5	6,666.4	436.7	1,848.9	4,391.4	9,073.2	15,200.3
Other banks' Loans (2019)	138,052	7,499.6	17,759.9	0.0	0.0	478.4	7,569.1	19,589.8
Other banks' Overdue Debt (2019)	138,052	21.7	151.5	0.0	0.0	0.0	0.0	0.0
Monthly Wages (2019)	112,488	1,810.7	1,062.2	755.7	1,073.3	1,563.3	2,243.4	3,204.5
Monthly Retirement Benefits (2019)	40,409	1,313.5	928.3	390.2	629.0	1,055.9	1,767.2	2,539.4
Monthly Social Security Benefits (2019)	43,071	341.4	439.4	33.6	63.5	163.8	445.7	881.3
Total Monthly Income (2019)	138,052	1,837.7	1,293.5	352.7	957.7	1,595.8	2,430.7	3,529.7
Other Monthly Inbound Transfers (2019)	138,052	663.6	976.1	25.7	107.2	298.0	803.8	1,693.8
Total Monthly Inbound Transfers (2019)	138,052	2,521.8	1,750.8	868.5	1,392.1	2,086.2	3,169.5	4,647.7
Monthly Direct Debit (2019)	138,052	330.8	285.0	65.7	137.2	254.9	432.6	681.1
Monthly Consumption (2019)	138,052	1,505.6	932.7	558.4	859.7	1,298.0	1,914.3	2,704.5
Number of Monthly Purchases	138,052	38.6	19.3	17.9	24.4	34.5	48.6	64.9
Installment	138,052	315.7	170.6	148.9	207.7	279.7	378.6	524.6
DTI (2019)	137,822	0.19	0.25	0.06	0.09	0.14	0.21	0.32
(CC+Ovdrft)/Income (2019)	137,789	0.21	0.43	0.00	0.00	0.04	0.22	0.59
7 Day Delinquency (2019)	138,052	0.02	0.13	0.00	0.00	0.00	0.00	0.00
30 Day Delinquency (2019)	138,052	0.01	0.08	0.00	0.00	0.00	0.00	0.00

This table lists for each variable its mean, standard deviation, the 10%, 25%, 50%, 75% and 90% percentiles, and the number of households for which non-missing records exist. Statistics are computed on household averages over 2019, except for the number of monthly purchases, where due to data limitations, 2020 household averages were used. Income, assets, liabilities and consumption measures are winsorized at the top and bottom 1% by month.

Table 2: Differences in Means between Treated and Control Groups

	Control Mean	Treatment Mean	Difference	t-test
HH Average Age	48.1	45.1	3.0***	35.1
Household Size	1.7	1.7	-0.0***	-8.1
Married	0.6	0.7	-0.0***	-8.9
Checking Accounts (2019)	6,940.9	3,083.3	3857.6***	42.7
Saving Accounts (2019)	11,836.8	4,563.2	7273.6***	42.0
Credit Cards and Overdraft (2019)	398.7	754.9	-356.2***	-31.2
Auto, Student and Educ. Loans (2019)	87.5	191.2	-103.7***	-6.2
Home Mortgage Loans (2019)	67,802.8	93,703.7	-25900.9***	-40.1
Other Loans (2019)	444.1	907.0	-462.9***	-12.4
Other banks' Loans (2019)	7,044.5	14,143.2	-7098.7***	-29.0
Other banks' Overdue Debt (2019)	19.8	48.9	-29.1***	-12.3
Monthly Wages (2019)	1,500.0	1,115.6	384.4***	34.6
Monthly Retirement Benefits (2019)	394.6	237.0	157.5***	23.9
Monthly Social Security Benefits (2019)	104.5	136.4	-31.9***	-9.9
Total Monthly Income (2019)	1,871.8	1,340.6	531.1***	43.5
Other Monthly Inbound Transfers (2019)	656.5	766.3	-109.7***	-9.5
Total Monthly Inbound Transfers (2019)	2,548.7	2,130.0	418.7***	22.9
Monthly Direct Debit (2019)	327.6	378.2	-50.6***	-14.3
Monthly Consumption (2019)	1,516.2	1,350.4	165.9***	16.2
Number of Monthly Purchases	38.3	42.7	-4.4***	-18.6
Installment	311.4	379.6	-68.3***	-31.8
DTI (2019)	0.19	0.30	-0.1***	-28.9
(CC+Ovdrft)/Income (2019)	0.19	0.45	-0.2***	-36.3
7 Day Delinquency (2019)	0.01	0.05	-0.0***	-15.8
30 Day Delinquency (2019)	0.01	0.02	-0.0***	-11.1
Number of Observations	129,201	8,851		
Forbearance Rate		0.06		

This table shows prepandemic means (2019 values), difference in means and their corresponding robust t-statistics between households who requested forbearance and those who never entered forbearance. Income, assets, liabilities and consumption measures are winsorized at the top and bottom 1% by month. Statistics are computed on household averages, including both missing and non-missing records, over 2019 (except for the number of monthly purchases, where due to data limitations 2020 household averages were used). *p<0.1; **p < 0.05; ***p < 0.01.

Table 3: Effect of Forbearance on Consumption

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Forbearance	0.144*** (0.013)	0.142*** (0.012)	0.141*** (0.012)	0.139*** (0.012)	0.153*** (0.012)	0.150*** (0.012)	0.149*** (0.011)	0.146*** (0.011)
Log(Total Inbound Transfers)		0.107*** (0.005)	0.107*** (0.005)	0.105*** (0.005)		0.114*** (0.004)	0.114*** (0.004)	0.112*** (0.004)
Log(CC + Overdraft)			0.005*** (0.002)	0.005*** (0.002)			0.006*** (0.001)	0.006*** (0.001)
Log(Direct Withdrawals)				0.019*** (0.002)	0.018*** (0.002)		0.026*** (0.003)	0.025*** (0.003)
Observations	6,626,485	6,626,485	6,626,485	6,626,485	6,626,485	6,626,485	6,626,485	6,626,485
R^2	0.506	0.513	0.514	0.516	0.583	0.589	0.590	0.592
Household FE	X	X	X	X				
Household \times Calendar Month FE					X	X	X	X
Month \times Year FE	X	X	X	X	X	X	X	X
Location \times Calendar Date FE					X			X

This table presents difference-in-differences estimates of regressions of the natural logarithm of monthly consumption, according to the model given by equation (3). Observations are at the household-calendar date level and the panel runs from January 2018 to December 2021. The dependent variable, monthly consumption, is measured as the natural logarithm of the sum between purchases and payments from either a debit or credit card at this bank. *Forbearance* is a dummy variable that takes the value of one for households receiving forbearance and zero otherwise. Controls include the natural logarithm of total inbound SEPA transfers, which includes wages, social security and retirement benefits and other unspecified inbound transfers; the natural logarithm of the end-of-the-month credit card and overdraft balance; and the natural logarithm of monthly direct withdrawals. Standard errors in parentheses are computed using two-way clustering (household and calendar date level). * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 4: Effect of Forbearance on Savings

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Forbearance	0.152*** (0.043)	0.148*** (0.042)	0.136*** (0.038)	0.136*** (0.038)	0.149*** (0.039)	0.144*** (0.038)	0.131*** (0.035)	0.132*** (0.035)
Log(Total Inbound Transfers)		0.193*** (0.007)	0.187*** (0.006)	0.187*** (0.006)		0.175*** (0.005)	0.170*** (0.005)	0.170*** (0.005)
Log(CC + Overdraft)			-0.148*** (0.003)	-0.148*** (0.003)			-0.145*** (0.003)	-0.145*** (0.003)
Log(Direct Withdrawals)				0.044*** (0.003)	0.044*** (0.003)		0.070*** (0.003)	0.070*** (0.003)
Observations	6,626,485	6,626,485	6,626,485	6,626,485	6,626,485	6,626,485	6,626,485	6,626,485
R^2	0.810	0.813	0.820	0.821	0.848	0.850	0.856	0.856
Household FE	X	X	X	X				
Household \times Calendar Month FE					X	X	X	X
Month \times Year FE	X	X	X	X	X	X	X	X
Location \times Calendar Date FE					X			X

This table presents difference-in-differences estimates of regressions of the natural logarithm of total assets, according to the model given by equation (3). Observations are at the household-calendar date level and the panel runs from January 2018 to December 2021. The dependent variable, total assets, is measured as the natural logarithm of the sum between end-of-the-month checking and saving accounts' balances. *Forbearance* is a dummy variable that takes the value of one for households receiving forbearance and zero otherwise. Controls include the natural logarithm of total inbound SEPA transfers, which includes wages, social security and retirement benefits and other unspecified inbound transfers; the natural logarithm of the end-of-the-month credit card and overdraft balance; and the natural logarithm of monthly direct withdrawals. Standard errors in parentheses are computed using two-way clustering (household and calendar date level). * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 5: Average Propensity to Consume

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Forb. Amount	0.221*** (0.029)	0.241*** (0.029)	0.244*** (0.029)	0.249*** (0.029)	0.232*** (0.027)	0.253*** (0.025)	0.256*** (0.026)	0.261*** (0.026)
Total Inbound Transfers		0.086*** (0.003)	0.087*** (0.003)	0.087*** (0.003)		0.093*** (0.003)	0.095*** (0.003)	0.094*** (0.003)
Changes in CC & Overdraft			0.134*** (0.020)	0.133*** (0.019)			0.134*** (0.014)	0.134*** (0.014)
Direct Withdrawals				-0.044*** (0.008)	-0.046*** (0.008)		-0.074*** (0.008)	-0.077*** (0.008)
Observations	6,626,485	6,626,485	6,488,423	6,488,423	6,626,485	6,626,485	6,488,423	6,488,423
<i>R</i> ²	0.545	0.556	0.557	0.560	0.656	0.663	0.666	0.668
Household FE	X	X	X	X				
Household × Calendar Month FE					X	X	X	X
Month × Year FE	X	X	X	X	X	X	X	X
Location × Calendar Date FE					X			

This table presents difference-in-differences estimates of regressions of monthly consumption, according to the model given by equation (3), but using only a “Post” dummy instead of monthly indicators. Observations are at the household-calendar date level and the panel runs from January 2018 to December 2021. The dependent variable, monthly consumption, is measured as the sum between purchases and payments from either a debit or credit card at this bank. *Forb. Amount* is the amount of postponed debt payments (mostly mortgages but it may include other loans for some households), taking the value of zero before the start of the forbearance for all households, as well as after the start of the forbearance (which can vary between March and June of 2020) for households not postponing payments. Controls include the amount of inbound SEPA transfers, which includes wages, social security and retirement benefits and other unspecified inbound transfers; changes in the end-of-the-month credit card and overdraft balance; and the amount of monthly direct withdrawals. Standard errors in parentheses are computed using two-way clustering (household and calendar date level). *p< 0.1; **p < 0.05; ***p < 0.01.

Table 6: Average Propensity to Save

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Forb. Amount	0.195* (0.101)	0.412*** (0.052)	0.419*** (0.050)	0.420*** (0.050)	0.200*** (0.048)	0.403*** (0.042)	0.412*** (0.041)	0.414*** (0.041)
Total Inbound Transfers		0.922*** (0.013)	0.926*** (0.013)	0.927*** (0.013)		0.902*** (0.011)	0.908*** (0.011)	0.908*** (0.011)
Changes in CC & Overdraft			-0.075** (0.029)	-0.074** (0.028)			-0.099*** (0.021)	-0.097*** (0.021)
Direct Withdrawals				-1.330*** (0.111)	-1.330*** (0.111)		-1.264*** (0.106)	-1.262*** (0.107)
Observations	6,488,423	6,488,423	6,488,423	6,488,423	6,488,423	6,488,423	6,488,423	6,488,423
<i>R</i> ²	0.017	0.078	0.079	0.081	0.270	0.308	0.309	0.310
Household FE	X	X	X	X				
Household × Calendar Month FE					X	X	X	X
Month × Year FE	X	X	X	X	X	X	X	X
Location × Calendar Date FE					X			

This table presents difference-in-differences estimates of regressions of end-of-the-month total assets amount, according to the model given by equation (3), but using only a “Post” dummy instead of monthly indicators. Observations are at the household-calendar date level and the panel runs from January 2018 to December 2021. The dependent variable, total assets, is measured as the sum between end-of-the-month checking and saving accounts’ balances. *Forb. Amount* is the amount of postponed debt payments (mostly mortgages but it may include other loans for some households), taking the value of zero before the start of the forbearance for all households, as well as after the start of the forbearance (which can vary between March and June of 2020) for households not postponing payments. Controls include the amount of inbound SEPA transfers, which includes wages, social security and retirement benefits and other unspecified inbound transfers; changes in the end-of-the-month credit card and overdraft balance; and the amount of monthly direct withdrawals. Standard errors in parentheses are computed using two-way clustering (household and calendar date level). *p< 0.1; **p < 0.05; ***p < 0.01.

Table 7: Heterogeneity in the Average Propensity to Consume

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Forb. Amount	0.533*** (0.035)	0.592*** (0.032)	0.738*** (0.043)	0.638*** (0.041)	0.565*** (0.039)	0.211*** (0.031)	0.068* (0.038)
Forb. Amount \times High Inc.	-0.425*** (0.050)		-0.299*** (0.055)	-0.403*** (0.056)	-0.423*** (0.051)		
Forb. Amount \times High Assets		-0.569*** (0.046)	-0.520*** (0.054)				
Forb. Amount \times High Assets \times High Inc.			0.046 (0.066)				
Forb. Amount \times High $\Delta\%$ Inc.				-0.362*** (0.052)			
Forb. Amount \times High $\Delta\%$ Inc. \times High Inc.					0.073 (0.065)		
Forb. Amount \times High $\Delta\%$ Wages						-0.206*** (0.055)	
Forb. Amount \times High $\Delta\%$ Wages \times High Inc.						0.031 (0.076)	
Forb. Amount \times Older							0.067* (0.035)
Forb. Amount \times High DTI							0.298*** (0.040)
Total Inbound Transfers	0.093*** (0.003)	0.093*** (0.003)	0.093*** (0.003)	0.093*** (0.003)	0.093*** (0.003)	0.093*** (0.003)	0.093*** (0.003)
Observations	6,626,485	6,626,485	6,626,485	6,626,485	6,626,485	6,626,485	6,626,485
R ²	0.664	0.664	0.664	0.664	0.664	0.663	0.664
Household \times Calendar Month FE	X	X	X	X	X	X	X
Month \times Year FE	X	X	X	X	X	X	X

This table presents difference-in-differences estimates of regressions of monthly consumption, according to the model given by equation (3). Observations are at the household-calendar date level and the panel runs from January 2018 to December 2021. The dependent variable, monthly consumption, is measured as the sum between purchases and payments from either a debit or credit card at this bank. *Forb. Amount* is the amount of postponed debt payments (mostly mortgages but it may include other loans for some households), taking the value of zero before the start of the forbearance for all households, as well as after the start of the forbearance (which can vary between March and June of 2020) for households not postponing payments. *High Assets* is a dummy variable that takes a value of one if the household has above-median total asset amount in 2019; *High Inc.* is a dummy variable that takes a value of one if the household has above-median amount of inbound SEPA transfers, which includes wages, social security and retirement benefits and other unspecified inbound transfers, in 2019; *High $\Delta\%$ Inc.* is a dummy variable that takes a value of one if the household has above-median year-on-year percentage change in inbound SEPA transfers at the onset of the pandemic (average between March and May, 2019 to 2020 change); *High $\Delta\%$ Wages* is a dummy variable that takes a value of one if the household has above-median year-on-year percentage change in wages at the onset of the pandemic (average between March and May, 2019 to 2020 change); *Older* is a dummy variable that takes a value of one if the household has above-median age; and *High DTI* is a dummy variable that takes a value of one if the household has above-median indebtedness in 2019, computed as the ratio between monthly installment amount and average inbound SEPA transfers. All specifications consider as a control the amount of inbound SEPA transfers. After computing the median of each variable over the group who received forbearance, the full sample is categorized into “high” and “low” by this median. Standard errors in parentheses are computed using two-way clustering (household and calendar date level). *p<0.1; **p<0.05; ***p<0.01.

Table 8: Heterogeneity in the Average Propensity to Save

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Forb. Amount	-0.064 (0.064)	0.091 (0.071)	-0.128 (0.076)	-0.239*** (0.081)	-0.105 (0.067)	0.343*** (0.051)	0.883*** (0.076)
Forb. Amount×High Inc.	0.710*** (0.106)		0.445*** (0.073)	0.554*** (0.120)	0.680*** (0.109)		
Forb. Amount×High Assets		0.525*** (0.126)	0.161* (0.093)				
Forb. Amount×High Assets×High Inc.			0.310** (0.142)				
Forb. Amount×High $\Delta\%$ Inc.				0.603*** (0.122)			
Forb. Amount×High $\Delta\%$ Inc.×High Inc.					0.153 (0.149)		
Forb. Amount×High $\Delta\%$ Wages					0.265*** (0.090)		
Forb. Amount×High $\Delta\%$ Wages×High Inc.						0.098 (0.129)	
Forb. Amount×Older						0.096 (0.085)	
Forb. Amount×High DTI							-0.772*** (0.087)
Total Inbound Transfers	0.902*** (0.011)	0.902*** (0.011)	0.902*** (0.011)	0.902*** (0.011)	0.902*** (0.011)	0.902*** (0.011)	0.902*** (0.011)
Observations	6,488,423	6,488,423	6,488,423	6,488,423	6,488,423	6,488,423	6,488,423
R ²	0.308	0.308	0.308	0.308	0.308	0.308	0.308
Household × Calendar Month FE	X	X	X	X	X	X	X
Month × Year FE	X	X	X	X	X	X	X

This table presents difference-in-differences estimates of regressions of end-of-the-month total assets amount, according to the model given by equation (3). Observations are at the household-calendar date level. The dependent variable, total assets, is measured as the sum between end-of-the-month checking and saving accounts' balances. *Forb. Amount* is the amount of postponed debt payments (mostly mortgages but it may include other loans for some households), taking the value of zero before the start of the forbearance for all households, as well as after the start of the forbearance (which can vary between March and June of 2020) for households not postponing payments. *High Assets* is a dummy variable that takes a value of one if the household has above-median total asset amount in 2019; *High Inc.* is a dummy variable that takes a value of one if the household has above-median amount of inbound SEPA transfers, which includes wages, social security and retirement benefits and other unspecified inbound transfers, in 2019; *High $\Delta\%$ Inc.* is a dummy variable that takes a value of one if the household has above-median year-on-year percentage change in inbound SEPA transfers at the onset of the pandemic (average between March and May, 2019 to 2020 change); *High $\Delta\%$ Wages* is a dummy variable that takes a value of one if the household has above-median year-on-year percentage change in wages at the onset of the pandemic (average between March and May, 2019 to 2020 change); *Older* is a dummy variable that takes a value of one if the household has above-median age; and *High DTI* is a dummy variable that takes a value of one if the household has above-median indebtedness in 2019, computed as the ratio between monthly installment amount and average inbound SEPA transfers. All specifications consider as a control the amount of inbound SEPA transfers. After computing the median of each variable over the group who received forbearance, the full sample is categorized into "high" and "low" by this median. Standard errors in parentheses are computed using two-way clustering (household and calendar date level). *p<0.1; **p < 0.05; ***p<0.01.

Table 9: Average Propensity to Consume During and After Forbearance

	(1)	(2)	(3)	(4)
Forb. Amount \times During	0.257*** (0.027)	0.263*** (0.027)	0.278*** (0.025)	0.281*** (0.026)
Forb. Amount \times Exit	0.212*** (0.026)	0.214*** (0.027)	0.208*** (0.025)	0.206*** (0.027)
Forb. Amount \times During \times Measure		-0.070 (0.070)		-0.030 (0.066)
Forb. Amount \times Exit \times Measure		-0.021 (0.087)		0.023 (0.082)
Total Inbound Transfers			0.096*** (0.003)	0.096*** (0.003)
Observations	7,454,795	7,454,795	7,454,795	7,454,795
R ²	0.632	0.632	0.641	0.641
Household \times Calendar Month FE	X	X	X	X
Month \times Year FE	X	X	X	X

This table presents difference-in-differences estimates of regressions of monthly consumption during and after the forbearance period. Observations are at the household-calendar date level and the panel runs from January 2018 to June 2022. The dependent variable, monthly consumption, is measured as the sum between purchases and payments from either a debit or credit card at this bank. *Forb. Amount* is the amount of postponed debt payments (mostly mortgages but it may include other loans for some households), taking the value of zero before the start of the forbearance for all households, as well as after the start of the forbearance (which can vary between March and June of 2020) for households not postponing payments; *Exit* is a dummy variable that takes a value of one on the month that forbearance ends (which is household-specific) and for each month thereafter. *Measure* is a dummy variable that takes a value of one if the household received an additional measure after the forbearance end. In some specifications, the amount of inbound SEPA transfers, which includes wages, social security and retirement benefits and other unspecified inbound transfers, is included as a control. Standard errors in parentheses are computed using two-way clustering (household and calendar date level). *p< 0.1; **p < 0.05; ***p< 0.01.

Table 10: Average Propensity to Save During and After Forbearance

	(1)	(2)	(3)	(4)
Forb. Amount×During	0.198*** (0.048)	0.222*** (0.050)	0.399*** (0.042)	0.390*** (0.043)
Forb. Amount×Exit	0.049 (0.071)	0.006 (0.079)	0.011 (0.069)	-0.068 (0.076)
Forb. Amount×During×Measure		-0.270*** (0.056)		0.110 (0.093)
Forb. Amount×Exit×Measure		0.538** (0.264)		0.965*** (0.272)
Total Inbound Transfers			0.902*** (0.011)	0.902*** (0.011)
Observations	7,316,731	7,316,731	7,316,731	7,316,731
R ²	0.241	0.241	0.280	0.280
Household × Calendar Month FE	X	X	X	X
Month × Year FE	X	X	X	X

This table presents difference-in-differences estimates of regressions of end-of-the-month total assets amount, according to the model given by equation (3). Observations are at the household-calendar date level and the panel runs from January 2018 to June 2022. The dependent variable, total assets, is measured as the sum between end-of-the-month checking and saving accounts' balances. *Forb. Amount* is the amount of postponed debt payments (mostly mortgages but it may include other loans for some households), taking the value of zero before the start of the forbearance for all households, as well as after the start of the forbearance (which can vary between March and June of 2020) for households not postponing payments; *During* is a dummy variable that takes a value of one on the month that forbearance starts (which is household-specific) and for each month thereafter until its end; *Exit* is a dummy variable that takes a value of one on the month that forbearance ends (which is household-specific) and for each month thereafter. *Measure* is a dummy variable that takes a value of one if the household received an additional measure after the forbearance end. In some specifications, the amount of inbound SEPA transfers, which includes wages, social security and retirement benefits and other unspecified inbound transfers, is included as a control. Standard errors in parentheses are computed using two-way clustering (household and calendar date level). *p<0.1; **p < 0.05; ***p<0.01.

Table 11: Average Propensity to Consume During and After Moratoria per Category

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
No Measure										
Forb. Amount \times During	0.083*** (0.007)	0.021*** (0.005)	0.006** (0.002)	0.011*** (0.002)	0.023*** (0.005)	0.011*** (0.003)	0.019*** (0.006)	0.019*** (0.003)	0.027*** (0.010)	0.001 (0.009)
Forb. Amount \times Exit	0.045*** (0.007)	0.016*** (0.005)	0.004* (0.002)	0.004 (0.002)	0.020*** (0.004)	0.005 (0.003)	0.017** (0.006)	0.011*** (0.003)	0.033** (0.013)	0.019** (0.009)
Additional Measure										
Forb. Amount \times During	0.082*** (0.017)	0.013 (0.011)	-0.002 (0.004)	-0.004 (0.004)	0.027*** (0.010)	0.012 (0.007)	0.018 (0.011)	0.011* (0.006)	0.031 (0.031)	-0.018 (0.013)
Forb. Amount \times Exit	0.066*** (0.021)	0.000 (0.013)	0.001 (0.004)	-0.002 (0.006)	0.010 (0.012)	0.003 (0.008)	0.004 (0.013)	0.017 (0.010)	0.098* (0.048)	0.002 (0.017)
Total Inbound Transfers	0.007*** (0.000)	0.004*** (0.000)	0.001*** (0.000)	0.002*** (0.000)	0.006*** (0.000)	0.002*** (0.000)	0.005*** (0.001)	0.003*** (0.000)	0.033*** (0.002)	0.003*** (0.000)
Observations	4,141,554	4,141,554	4,141,554	4,141,554	4,141,554	4,141,554	4,141,554	4,141,554	4,141,554	4,141,554
R ²	0.612	0.397	0.249	0.202	0.384	0.312	0.424	0.325	0.439	0.760
Household FE	X	X	X	X	X	X	X	X	X	X
Month \times Year FE	X	X	X	X	X	X	X	X	X	X

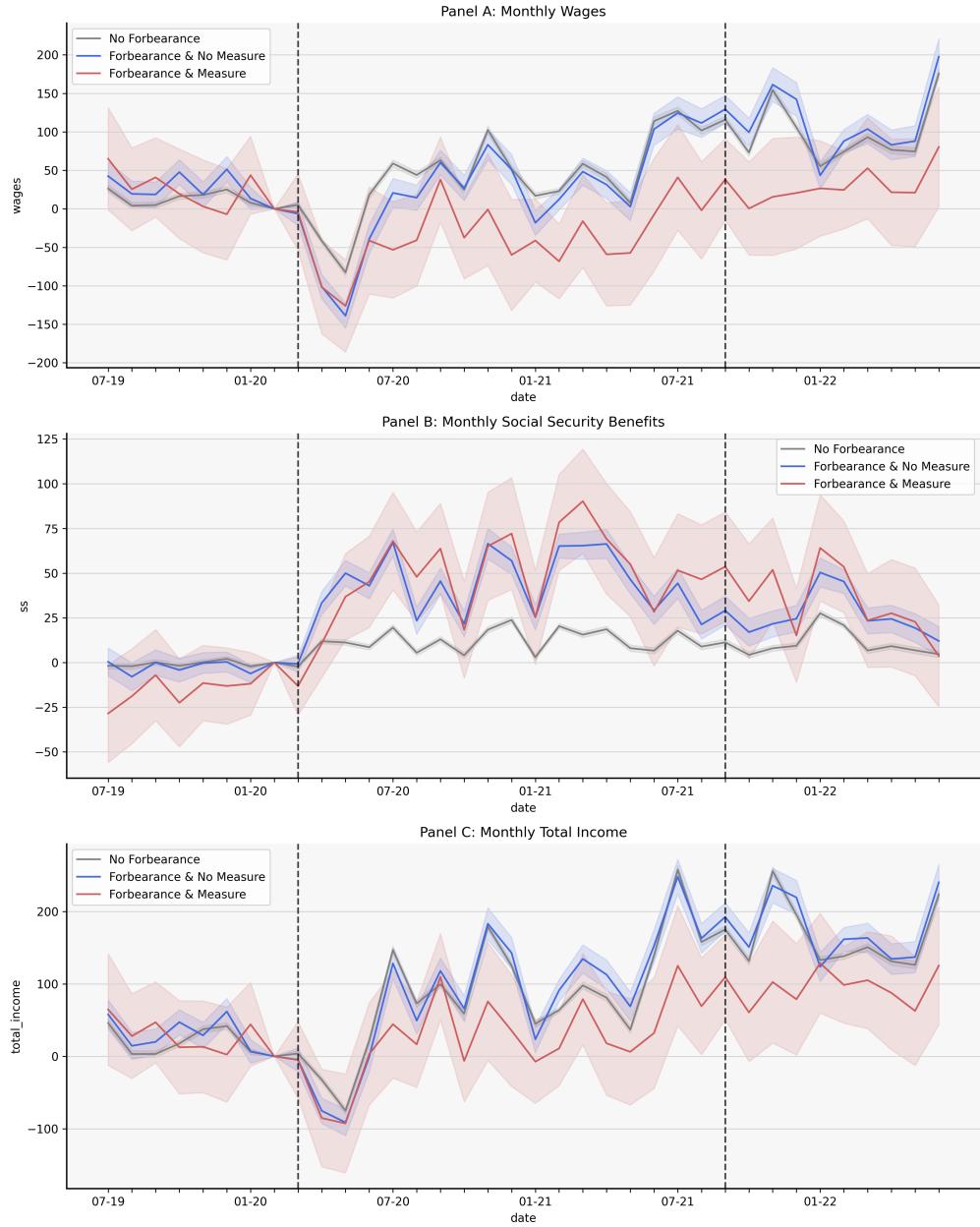
This table presents difference-in-differences estimates of regressions of monthly consumption during and after the forbearance period. Observations are at the household-calendar date level and the panel runs from January 2018 to June 2022. Each column shows a different consumption category as dependent variable: (1) Groceries; (2) Clothing; (3) Housing Maintenance and Utilities; (4) Furniture; (5) Transport; (6) Health Care; (7) Restaurants; (8) Entertainment and Education; (9) Miscellaneous Goods and Services; and (10) Direct Withdrawals. *Forb. Amount* is the amount of postponed debt payments (mostly mortgages but it may include other loans for some households), taking the value of zero before the start of the forbearance for all households, as well as after the start of the forbearance (which can vary between March and June of 2020) for households not postponing payments; *During* is a dummy variable that takes a value of one on the month that forbearance starts (which is household-specific) and for each month thereafter until its end; *Exit* is a dummy variable that takes a value of one on the month that forbearance ends (which is household-specific) and for each month thereafter. The amount of inbound SEPA transfers, which includes wages, social security and retirement benefits and other unspecified inbound transfers, is included as a control in all specifications. Standard errors in parentheses are computed using two-way clustering (household and calendar date level). *p< 0.1; **p < 0.05; ***p < 0.01.

Internet Appendix for

“How Do Households React to Forbearance?

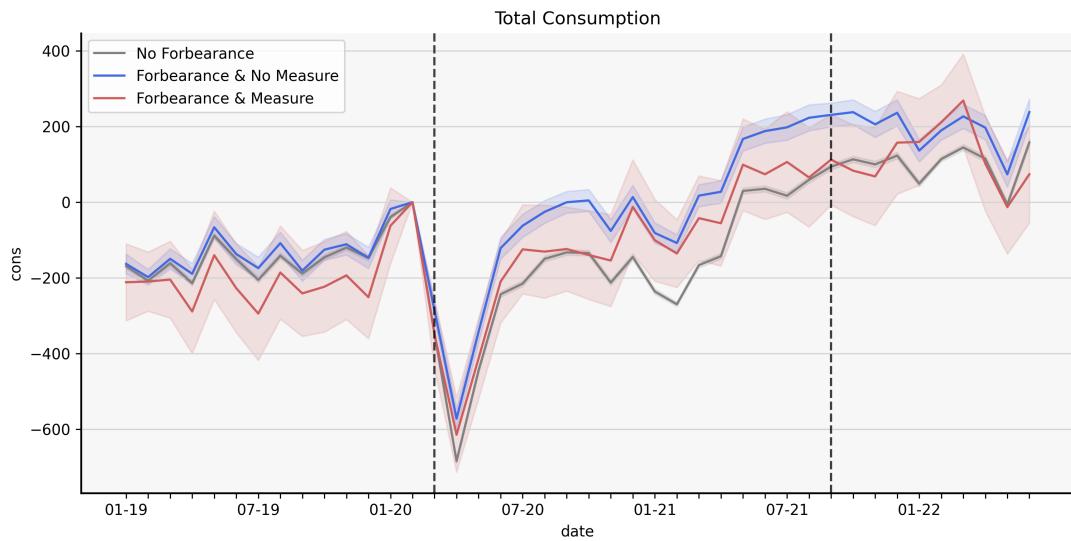
Evidence from Microdata”

Figure IA.1: Income Trends (Levels)



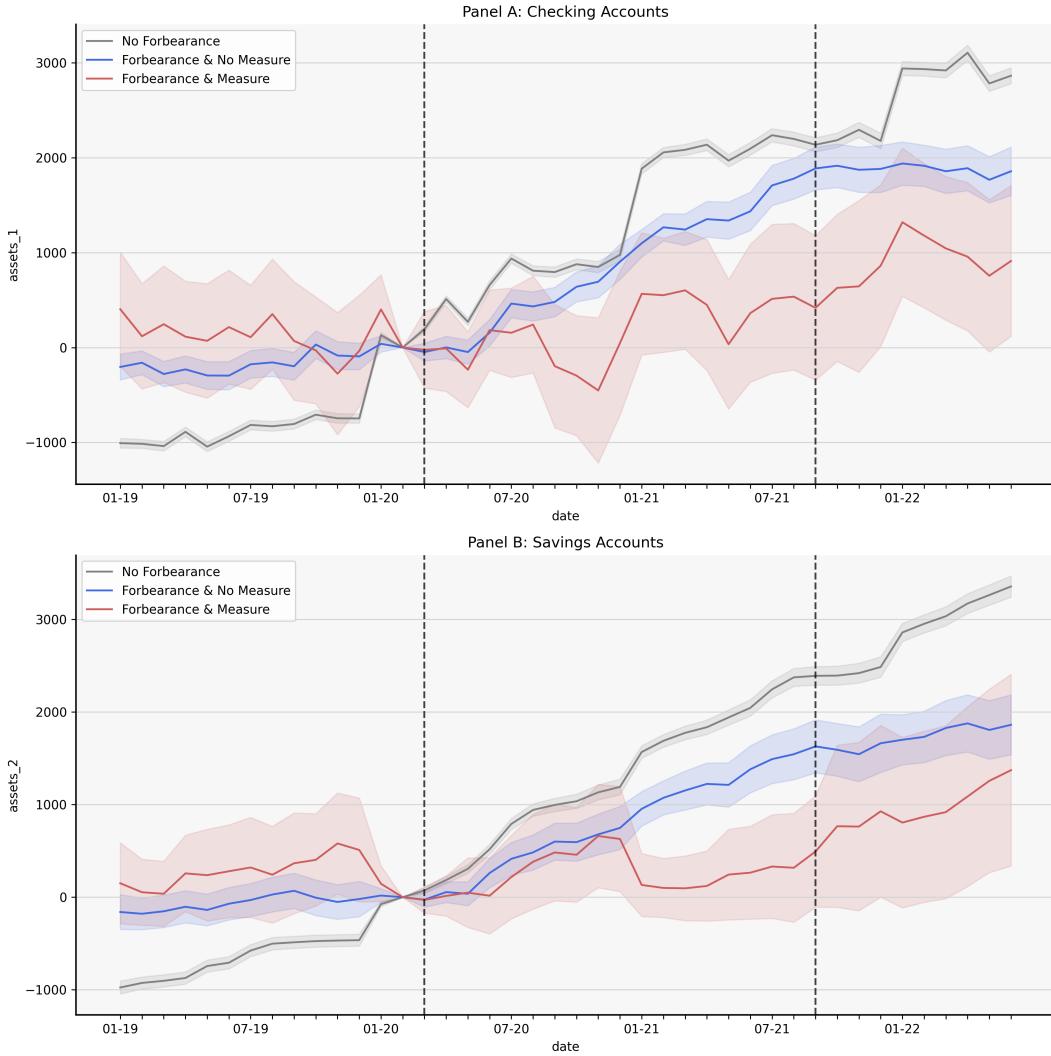
This figure plots the household average for different income sources, as well as the corresponding 95% confidence intervals, from July 2019 to June 2022. All measures are reported in euros, seasonally adjusted and relative to a prepandemic baseline (February, 2020). Panel A reports the average change in monthly direct deposit of wages relative to the prepandemic baseline, while Panel B shows the change in social security benefits received. Panel C shows the change in total monthly income relative to the baseline, computed as the sum between monthly wages, social security and retirement benefits. In all panels the average change is represented separately for households who received forbearance and requested an additional measure after its end (in red), those who received forbearance but did not request an additional measure (in blue) and those who never entered forbearance (in grey). Standard errors are clustered at the household level.

Figure IA.2: Consumption Trends (Levels)



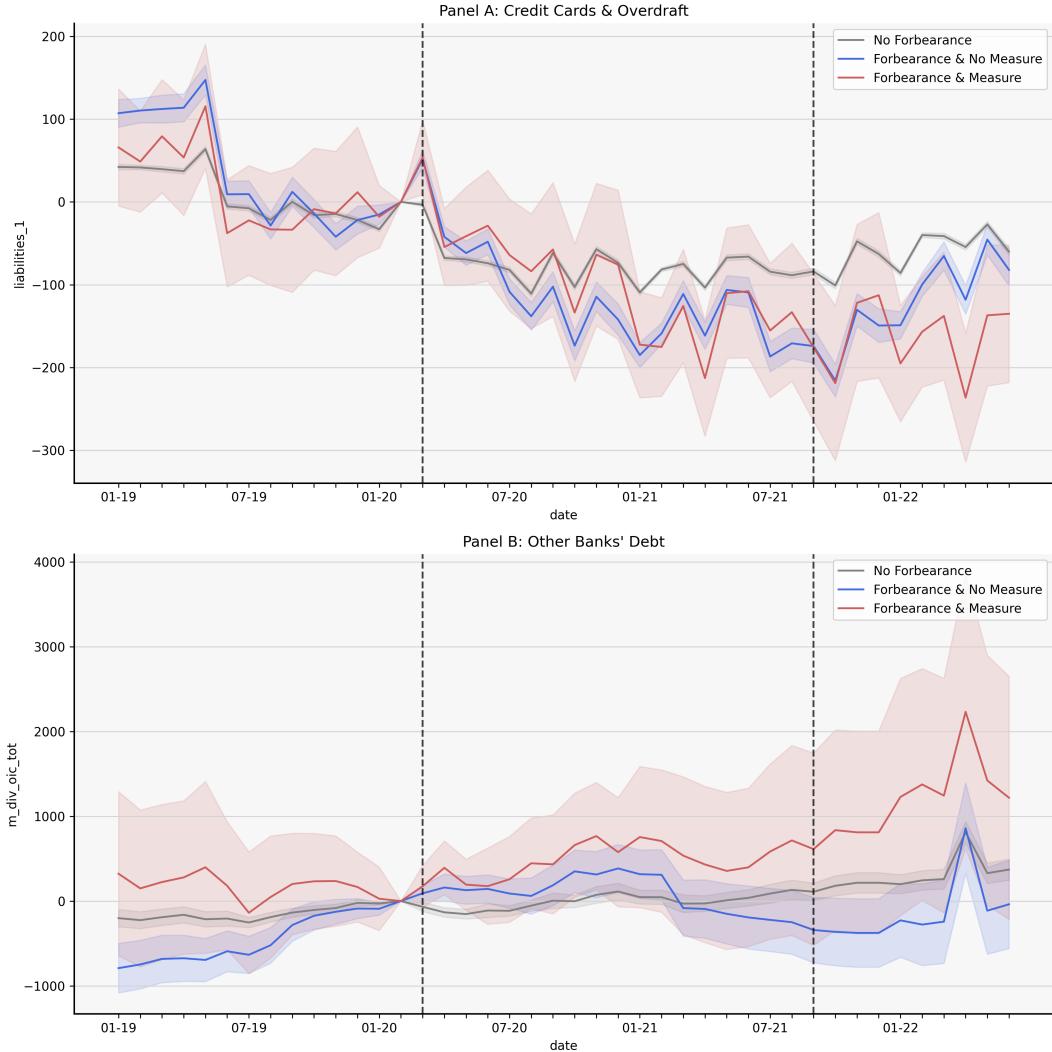
This figure plots the household average for monthly consumption, as well as the corresponding 95% confidence interval, from January 2019 to June 2022. Monthly consumption is computed as the sum between purchases and payments from either a debit or credit card at this bank. The measure is reported in euros, seasonally adjusted and relative to a pre-pandemic baseline (February, 2020), thus showing the average change in consumption relative to the baseline. The average change is represented separately for households who received forbearance and requested an additional measure after its end (in red), those who received forbearance but did not request an additional measure (in blue) and those who never entered forbearance (in grey). Standard errors are clustered at the household level.

Figure IA.3: Balance Sheet Trends (Levels)



This figure plots the household average for different assets, as well as the corresponding 95% confidence intervals, from January 2019 to June 2022. All measures are reported in euros, seasonally adjusted and relative to a prepandemic baseline (February, 2020). Panel A reports the average change in the end-of-the-month checking account balance relative to the prepandemic baseline, while Panel B shows the change in the end-of-the-month balance in saving accounts. In both panels the average change is represented separately for households who received forbearance and requested an additional measure after its end (in red), those who received forbearance but did not request an additional measure (in blue) and those who never entered forbearance (in grey). Standard errors are clustered at the household level.

Figure IA.4: Balance Sheet Trends (Levels)



This figure plots the household average for different liabilities, as well as the corresponding 95% confidence intervals, from January 2019 to June 2022. All measures are reported in euros. Panel A reports the seasonally-adjusted average change in the end-of-the-month credit card and overdraft balance relative to the prepandemic baseline (February 2020), while Panel B shows the change in end-of-the-month balances for loans outstanding in other financial institutions. In both panels the trends are represented separately for households who received forbearance and requested an additional measure after its end (in red), those who received forbearance but did not request an additional measure (in blue) and those who never entered forbearance (in grey). Standard errors are clustered at the household level.

Table IA.1: Household Consumption growth: Sample and Country Average

	Sample	Portugal Average
2019	7.2%	4.2%
2020	-4.1%	-4.7%
2021	14.8%	13.8%

This table shows the in-sample annual growth rate of consumption for the average household and the corresponding statistic at the country level. In our sample, consumption is measured as the sum between purchases and payments from either a debit or credit card at this bank. For the country's average we computed the yearly growth rate taking into consideration the average consumption by resident households, measured as final consumption expenditure of resident households divided by the number of private households within resident population. National accounts data are from INE.

Table IA.2: Summary Statistics for the control group

Variable	N	Mean	SD	p10	p25	p50	p75	p90
HH Average Age	129,201	48.1	9.2	37.0	41.5	47.0	54.0	61.0
Household Size	129,201	1.7	0.5	1.0	1.0	2.0	2.0	2.0
Married	84,723	1.0	0.2	1.0	1.0	1.0	1.0	1.0
Checking Accounts (2019)	129,201	6,940.9	12,692.8	220.6	747.3	2,133.8	6,849.2	18,481.3
Saving Accounts (2019)	86,159	17,750.0	29,133.5	0.0	500.6	6,044.9	21,154.0	50,138.6
Credit Cards and Overdraft (2019)	129,168	398.8	759.3	0.0	0.0	78.4	442.0	1,163.6
Auto, Student and Educ. Loans (2019)	1,659	6,811.7	5,233.6	1,115.9	2,765.3	5,641.0	9,626.3	14,301.4
Home Mortgage Loans (2019)	129,201	67,802.8	51,117.2	14,726.7	29,791.5	55,829.8	93,170.3	134,729.5
Other Loans (2019)	8,894	6,451.6	6,610.4	436.2	1,815.9	4,369.1	9,045.0	15,138.2
Other banks' Loans (2019)	129,201	7,044.5	17,287.3	0.0	0.0	385.6	6,822.0	18,405.0
Other banks' Overdue Debt (2019)	129,201	19.8	145.5	0.0	0.0	0.0	0.0	0.0
Monthly Wages (2019)	105,778	1,832.2	1,068.8	762.0	1,091.1	1,580.1	2,272.8	3,237.9
Monthly Retirement Benefits (2019)	38,484	1,324.7	932.9	390.2	637.7	1,069.4	1,782.3	2,552.7
Monthly Social Security Benefits (2019)	39,053	345.7	445.4	33.4	63.6	164.2	450.3	894.3
Total Monthly Income (2019)	129,201	1,871.8	1,298.9	399.2	991.4	1,620.7	2,471.4	3,577.5
Other Monthly Inbound Transfers (2019)	129,201	656.5	969.7	25.4	106.4	293.5	792.8	1,678.7
Total Monthly Inbound Transfers (2019)	129,201	2,548.7	1,753.9	885.9	1,416.4	2,112.6	3,203.7	4,685.9
Monthly Direct Debit (2019)	129,201	327.6	281.8	65.9	136.7	252.8	427.9	672.5
Monthly Consumption (2019)	129,201	1,516.2	931.8	568.4	870.0	1,308.5	1,928.3	2,715.0
Number of Monthly Purchases	129,201	38.3	19.1	17.9	24.2	34.3	48.2	64.3
Installment	129,201	311.4	167.7	146.3	205.0	276.7	373.9	516.4
DTI (2019)	128,994	0.19	0.24	0.06	0.09	0.13	0.20	0.30
(CC+Ovdrft)/Income (2019)	128,964	0.19	0.41	0.00	0.00	0.03	0.20	0.54
7 Day Delinquency (2019)	129,201	0.01	0.12	0.00	0.00	0.00	0.00	0.00
30 Day Delinquency (2019)	129,201	0.01	0.07	0.00	0.00	0.00	0.00	0.00

This table lists for each variable its mean, standard deviation, the 10%, 25%, 50%, 75% and 90% percentiles, and the number of households for which non-missing records exist. Statistics are computed on household averages over the corresponding period. The sample consists only on household who never entered forbearance. Income, assets, liabilities and consumption measures are winsorized at the top and bottom 1% by month.

Table IA.3: Summary Statistics for the treatment group

Variable	N	Mean	SD	p10	p25	p50	p75	p90
HH Average Age	8,851	45.1	7.7	36.0	40.0	44.0	50.0	55.0
Household Size	8,851	1.7	0.5	1.0	1.0	2.0	2.0	2.0
Married	6,167	1.0	0.2	1.0	1.0	1.0	1.0	1.0
Checking Accounts (2019)	8,851	3,083.3	7,828.2	36.4	243.3	803.2	2,315.4	7,017.5
Saving Accounts (2019)	4,440	9,096.5	20,039.1	0.0	33.6	1,270.8	8,105.4	25,894.5
Credit Cards and Overdraft (2019)	8,848	755.2	1,055.7	0.0	37.2	345.3	994.6	2,110.6
Auto, Student and Educ. Loans (2019)	223	7,588.7	6,271.7	830.1	2,645.2	6,295.4	11,091.2	16,620.7
Home Mortgage Loans (2019)	8,851	93,703.7	59,301.0	31,034.4	48,793.7	81,982.8	122,530.5	174,814.4
Other Loans (2019)	1,168	6,873.1	7,070.0	441.6	2,088.3	4,558.8	9,167.3	16,217.8
Other banks' Loans (2019)	8,851	14,143.2	22,585.5	0.0	465.8	6,209.4	17,257.2	35,867.1
Other banks' Overdue Debt (2019)	8,851	48.9	219.2	0.0	0.0	0.0	0.0	31.0
Monthly Wages (2019)	6,710	1,471.5	886.1	679.0	878.8	1,291.9	1,797.5	2,518.7
Monthly Retirement Benefits (2019)	1,925	1,089.9	799.5	351.0	518.3	849.6	1,404.2	2,169.9
Monthly Social Security Benefits (2019)	4,018	300.4	373.4	35.2	63.0	151.6	410.2	750.0
Total Monthly Income (2019)	8,851	1,340.6	1,096.3	60.8	620.0	1,166.1	1,820.2	2,654.8
Other Monthly Inbound Transfers (2019)	8,851	766.3	1,059.6	28.6	121.7	374.5	964.8	1,918.6
Total Monthly Inbound Transfers (2019)	8,851	2,130.0	1,655.4	648.9	1,076.7	1,758.1	2,647.0	3,953.0
Monthly Direct Debit (2019)	8,851	378.2	325.0	62.2	146.0	290.8	508.0	803.5
Monthly Consumption (2019)	8,851	1,350.4	931.1	441.1	711.8	1,141.8	1,711.1	2,492.4
Number of Monthly Purchases	8,851	42.7	21.5	19.1	26.7	38.1	54.4	73.3
Installment	8,851	379.6	197.4	197.3	249.3	326.6	447.6	643.9
DTI (2019)	8,828	0.30	0.36	0.09	0.13	0.19	0.31	0.53
(CC+Ovdrft)/Income (2019)	8,825	0.45	0.64	0.00	0.02	0.20	0.57	1.24
7 Day Delinquency (2019)	8,851	0.05	0.22	0.00	0.00	0.00	0.00	0.00
30 Day Delinquency (2019)	8,851	0.02	0.15	0.00	0.00	0.00	0.00	0.00

This table lists for each variable its mean, standard deviation, the 10%, 25%, 50%, 75% and 90% percentiles, and the number of households for which non-missing records exist. Statistics are computed on household averages over the corresponding period. The sample consists only on household who requested forbearance. Income, assets, liabilities and consumption measures are winsorized at the top and bottom 1% by month.

Table IA.4: Pre-Pandemic Differences between Groups (within Treated)

	No Measure	Measure	Difference	t-test
HH Average Age	45.0	46.6	-1.6***	-5.0
Household Size	1.7	1.6	0.1***	3.8
Married	0.7	0.6	0.1***	3.6
Checking Accounts (2019)	3,111.5	2,694.8	416.7	1.2
Saving Accounts (2019)	4,705.0	2,606.2	2098.8***	4.3
Credit Cards and Overdraft (2019)	742.0	933.5	-191.5***	-4.0
Auto, Student and Educ. Loans (2019)	198.5	89.9	108.7***	2.6
Home Mortgage Loans (2019)	92,432.0	111,254.6	-18822.6***	-7.5
Other Loans (2019)	905.3	929.8	-24.4	-0.2
Other banks' Loans (2019)	13,935.6	17,007.9	-3072.3***	-3.2
Other banks' Overdue Debt (2019)	44.5	109.9	-65.4***	-5.0
Monthly Wages (2019)	1,120.6	1,046.8	73.7*	1.8
Monthly Retirement Benefits (2019)	235.2	262.3	-27.1	-1.0
Monthly Social Security Benefits (2019)	135.9	143.3	-7.5	-0.6
Total Monthly Income (2019)	1,343.3	1,304.5	38.8	0.9
Other Monthly Inbound Transfers (2019)	766.9	757.6	9.3	0.2
Total Monthly Inbound Transfers (2019)	2,133.1	2,087.5	45.6	0.7
Monthly Direct Debit (2019)	379.8	355.3	24.5*	1.7
Monthly Consumption (2019)	1,351.8	1,330.2	21.6	0.5
Number of Monthly Purchases	42.6	43.4	-0.8	-0.8
Installment	376.8	418.4	-41.6***	-4.8
Forbearance Exposure	0.96	0.98	-0.0***	-6.6
DTI (2019)	0.30	0.33	-0.0**	-2.2
(CC+Ovdrft)/Income (2019)	0.44	0.54	-0.1***	-3.5
7 Day Delinquency (2019)	0.05	0.12	-0.1***	-5.7
30 Day Delinquency (2019)	0.02	0.07	-0.0***	-4.5
Number of Observations	8,253	598		
Measure Rate		0.07		

This table shows prepandemic means (2019 values), difference in means and their corresponding robust t-statistics between households who requested forbearance and additional measure after its end, and those who requested forbearance but no additional measure. Income, assets, liabilities and consumption measures are winsorized at the top and bottom 1% by month. Statistics are computed on household averages, including both missing and non-missing records, over 2019 (except for the number of monthly purchases, where due to data limitations 2020 household averages were used). * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table IA.5: Heterogeneity in the Average Propensity to Consume - Additional Controls

	(1)	(2)	(3)	(4)	(5)
Forb. Amount \times Post	0.538*** (0.023)	0.600*** (0.021)	0.749*** (0.025)	0.212*** (0.027)	0.065* (0.030)
Forb. Amount \times Post \times High Inc.		-0.434*** (0.032)		-0.303*** (0.042)	
Forb. Amount \times Post \times High Assets			-0.586*** (0.032)	-0.533*** (0.049)	
Forb. Amount \times Post \times High Assets \times High Inc.				0.043 (0.066)	
Forb. Amount \times Post \times Older					0.063 (0.035)
Forb. Amount \times Post \times High DTI					0.301*** (0.036)
Total Inbound Transfers	0.093*** (0.001)	0.094*** (0.001)	0.093*** (0.001)	0.094*** (0.001)	0.093*** (0.001)
Changes in CC & Overdraft	0.137*** (0.002)	0.137*** (0.002)	0.137*** (0.002)	0.137*** (0.002)	0.137*** (0.002)
Direct Withdrawals	-0.077*** (0.005)	-0.077*** (0.005)	-0.077*** (0.005)	-0.077*** (0.005)	-0.077*** (0.005)
Observations	6,488,423	6,488,423	6,488,423	6,488,423	6,488,423
R ²	0.668	0.668	0.668	0.667	0.668
Household \times Calendar Month FE	X	X	X	X	X
Month \times Year FE	X	X	X	X	X

This table presents difference-in-differences estimates of regressions of monthly consumption, according to the model given by equation (3). Observations are at the household-calendar date level and the panel runs from January 2018 to December 2021. The dependent variable, monthly consumption, is measured as the sum between purchases and payments from either a debit or credit card at this bank. *Forb. Amount* is equal to the amount of installment under the forbearance provision and *Post* is a dummy variable that takes a value of one on the month that forbearance starts (which is household-specific) and for each month thereafter. *High Assets* is a dummy variable that takes a value of one if the household has above-median total asset amount in 2019; *High Inc.* is a dummy variable that takes a value of one if the household has above-median amount of inbound SEPA transfers, which includes wages, social security and retirement benefits and other unspecified inbound transfers, in 2019; *High $\Delta\%$ Inc.* is a dummy variable that takes a value of one if the household has above-median year-on-year percentage change in inbound SEPA transfers at the onset of the pandemic (average between March and May, 2019 to 2020 change); *High $\Delta\%$ Wages* is a dummy variable that takes a value of one if the household has above-median year-on-year percentage change in wages at the onset of the pandemic (average between March and May, 2019 to 2020 change); *Older* is a dummy variable that takes a value of one if the household has above-median age; and *High DTI* is a dummy variable that takes a value of one if the household has above-median indebtedness in 2019, computed as the ratio between monthly installment amount and average inbound SEPA transfers. All specifications consider as a control the amount of inbound SEPA transfers, changes in credit card and overdraft balances and direct withdrawals. After computing the median of each variable over the group who received forbearance, the full sample is categorized into “high” and “low” by this median. Standard errors in parentheses are computed using two-way clustering (household and calendar date level). *p<0.1; **p<0.05; ***p<0.01.

Table IA.6: Heterogeneity in the Average Propensity to Save - Additional Controls

	(1)	(2)	(3)	(4)	(5)
Forb. Amount×Post	-0.052 (0.045)	0.129*** (0.032)	-0.097* (0.040)	0.399*** (0.059)	0.928*** (0.078)
Forb. Amount×Post×High Inc.		0.747*** (0.071)		0.459*** (0.062)	
Forb. Amount×Post×High Assets			0.523*** (0.070)	0.114 (0.102)	
Forb. Amount×Post×High Assets×High Inc.				0.364** (0.136)	
Forb. Amount×Post×Older					0.066 (0.078)
Forb. Amount×Post×High DTI					-0.786*** (0.088)
Total Inbound Transfers	0.908*** (0.005)	0.908*** (0.005)	0.908*** (0.005)	0.908*** (0.005)	0.908*** (0.005)
Changes in CC & Overdraft	-0.097*** (0.014)	-0.097*** (0.014)	-0.097*** (0.014)	-0.097*** (0.014)	-0.097*** (0.014)
Direct Withdrawals	-1.202*** (0.025)	-1.201*** (0.025)	-1.202*** (0.025)	-1.202*** (0.025)	-1.201*** (0.025)
Observations	6,488,423	6,488,423	6,488,423	6,488,423	6,488,423
R ²	0.307	0.307	0.307	0.307	0.307
Household × Calendar Month FE	X	X	X	X	X
Month × Year FE	X	X	X	X	X

This table presents difference-in-differences estimates of regressions of end-of-the-month total assets amount, according to the model given by equation (3). Observations are at the household-calendar date level. The dependent variable, total assets, is measured as the sum between end-of-the-month checking and saving accounts' balances. *Forb. Amount* is equal to the amount of installment under the forbearance provision and *Post* is a dummy variable that takes a value of one on the month that forbearance starts (which is household-specific) and for each month thereafter. *High Assets* is a dummy variable that takes a value of one if the household has above-median total asset amount in 2019; *High Inc.* is a dummy variable that takes a value of one if the household has above-median amount of inbound SEPA transfers, which includes wages, social security and retirement benefits and other unspecified inbound transfers, in 2019; *High Δ% Inc.* is a dummy variable that takes a value of one if the household has above-median year-on-year percentage change in inbound SEPA transfers at the onset of the pandemic (average between March and May, 2019 to 2020 change); *High Δ% Wages* is a dummy variable that takes a value of one if the household has above-median year-on-year percentage change in wages at the onset of the pandemic (average between March and May, 2019 to 2020 change); *Older* is a dummy variable that takes a value of one if the household has above-median age; and *High DTI* is a dummy variable that takes a value of one if the household has above-median indebtedness in 2019, computed as the ratio between monthly installment amount and average inbound SEPA transfers. All specifications consider as a control the amount of inbound SEPA transfers, changes in credit card and overdraft balances and direct withdrawals. After computing the median of each variable over the group who received forbearance, the full sample is categorized into "high" and "low" by this median. Standard errors in parentheses are computed using two-way clustering (household and calendar date level).

*p<0.1; **p<0.05; ***p<0.01.