Financial Conduct Authority

Research Note

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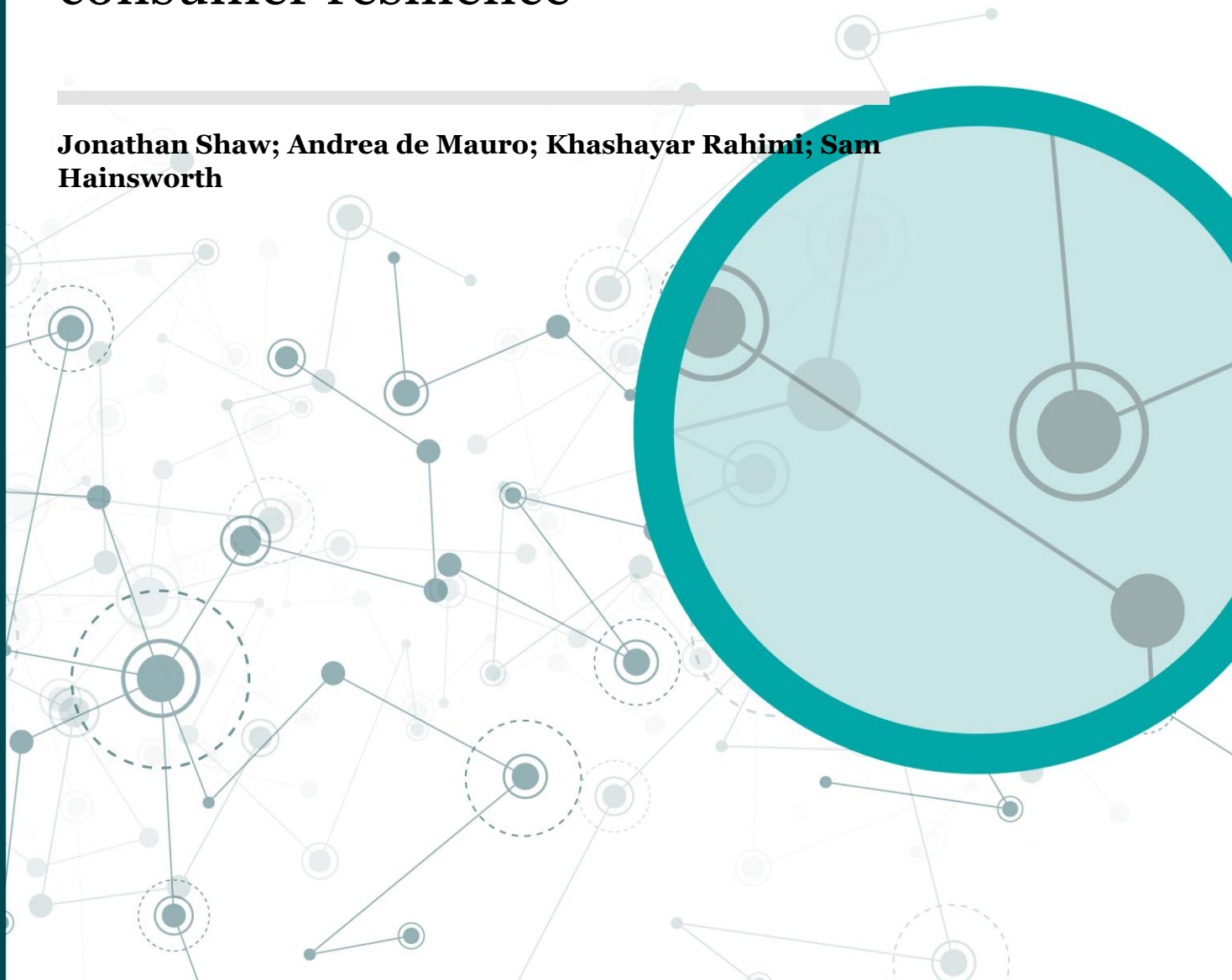
Income shocks and credit use during Covid: How unexpected changes in income affect consumption, credit use and consumer resilience

Jonathan Shaw; Andrea de Mauro; Khashayar Rahimi; Sam Hainsworth



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Summary

This analysis looks at how unexpected changes in income ('income shocks') impact consumers, during the period of Covid-19. We study impacts on consumer welfare, how consumers respond to different types of income shock in terms of saving, consumption, and borrowing behaviours, and whether income shocks can lead to financial distress.

Experiencing an income shock can make consumers financially vulnerable. As part of the FCA's commitment in the Consumer Duty, we are focused on how firms can offer support to consumers that face changes in circumstances that lead to them becoming vulnerable. Given this, we put a greater focus on negative income shocks and consumer resilience to these shocks in our analysis.

We find that whether an income change is considered a shock, whether this is perceived as transitory or permanent, and whether the shock is positive or negative makes a substantial difference to its impacts on consumption, credit demand and arrears.

On average, consumers were resilient to negative income shocks. They made sensible financial decisions and efficient use of credit when experiencing income shocks. Permanent negative shocks led to consumers cutting back on consumption, whereas transitory negative income shocks led to increased borrowing, but without increasing the probability of arrears. This demonstrates the appropriate usage of credit by consumers and highlights the positive role of credit when consumers face unexpected changes in circumstance. It also highlights responsible lending by firms that doesn't increase arrears rates.

Permanent income shocks significantly impact consumption, which is often used by researchers as a proxy for welfare. Our findings show that a 10% permanent income shock leads to a 6.3% change in spending with the remainder absorbed by changes in saving, whereas transitory income shocks are almost fully smoothed away using savings and little change in spending. This demonstrates that transitory shocks are less costly for consumers in terms of welfare loss. This also illustrates that consumers take responsibility for their financial decisions (i.e. consumers are able to "help themselves") (2024), using savings to support their financial resilience. The FCA will continue to support consumer resilience and promote adequate savings which can help minimise consumer harms following an income shock.

Shocks also have important implications for credit demand. Counterintuitively, demand for credit increases following a transitory positive income shock. This result is mostly driven by individuals that lose less income than expected. A 10% positive transitory shock increases likelihood of borrowing by 3.7 percentage points (31%). This is in line with other literature on the topic, which found the largest credit card balance increases were associated with positive employment shocks (Hundtofte et al., 2024). Possible explanations for this result are that individuals take advantage of better than expected circumstances by making capital purchases that require borrowing; or whilst their circumstances were better than expected, this still wasn't enough to avoid increased borrowing given the fall in income. Increasing credit demand is also reflected by an increase in credit searches in the three months following a transitory negative shock and a weakly significant increase

in the likelihood of borrowing, which is likely to be used alongside savings to smooth consumption over time.

We find that both permanent and transitory negative income shocks have no statistically significant impact on the probability of credit arrears (i.e. missed repayments). This is in line with other academic literature that find individuals adjust consumption to smooth debt balances following an income shock. However, we do find that a 10% negative permanent income shock increases the *perceived* likelihood (self-reported) of being in arrears in the next 6 months by 2.25 percentage points, equivalent to a 50% increase.

In general consumers had gloomy expectations, and consistently overestimated the risk of unemployment and arrears whilst underestimating income and hours worked. This could explain why, on average, consumers were able to maintain financial resilience, as they adjusted their consumption, saving and borrowing behaviour to be naturally cautious due to the macroeconomic uncertainty.

When considering the findings of this analysis it should be noted that these represent population average effects and may not reflect the full range of impacts from income shocks. Some sub-groups (e.g. those with no savings) are likely to be less resilient to income shocks.

Caution should be taken when generalising these findings to other economic shocks. Whilst all economic shocks have a specific context, the Covid-19 period was more unique than most, with restrictions on some forms of consumption (e.g. foreign travel, hospitality), policy interventions to support lost income and additional forbearance measures to support those in financial difficulty. These unique circumstances mean the findings from this report may be somewhat specific to the Covid-19 period (Feb 2020- May 2021). Whilst our findings cover the Covid-19 period, we believe the qualitative results and direction of impacts can still be generalised to other periods. First, our results compare individuals who went through the pandemic, some whose income was affected against others' whose income was not affected. This means the impact of the pandemic is partly (not fully) removed from our estimates. Second, there is a broad agreement between our results and predictions from the relevant theory. Finally, our conclusion regarding the need to distinguish between different types of income changes doesn't require each individual finding to hold. This is the foundation for our main policy implications, which we consider as useful for application to income shocks more generally.

These findings support in identifying which shocks are more painful for consumers and how consumers respond. The impact of income shocks on consumption, arrears and demand for credit demonstrate that income shocks constitute a life event that may require further consideration by firms. This analysis, and the published FCA analysis on employment shocks and financial difficulty, conclude that understanding the specific circumstances of a shock and its persistence will help firms to assess the appropriate support that may be required. Previous research also finds that the way in which this support is delivered is important too. Insights from behavioural science show that both the process and the communication approach can impact a consumers' willingness to engage, especially for those with additional vulnerabilities and needs.

1 Overview

Background

The FCA regularly undertakes analysis to ensure that financial markets function well and that there is an appropriate level of protection and support for consumers of financial products and services to receive the support they need. As part of the Consumer Duty, the FCA requires relevant firms to tailor support to the needs of consumers. Our findings support firms in this process by identifying life circumstances where consumers may be vulnerable and providing empirical evidence on the impact of income loss.

This research looks at consumers that experienced an unexpected change in their income (referred to as an 'income shock') during the period of Covid-19, and the subsequent impacts of this shock. Income shocks can be either positive or negative, and the size of the shock reflects the magnitude of the difference between an individual's expectations and what happened. Examples of positive and negative income shocks include:

- Positive: Unexpectedly high tips, surprise pay rise, additional hours, larger than expected bonus
- Negative: Furlough, unexpected reduction in hours, loss of bonus

We focus on how consumers respond to an unexpected change in income and the implications this has for their financial outcomes and welfare. We look at how income shocks impact on three consumer outcomes: 1) consumption, 2) borrowing, and 3) arrears. We focus on consumption because it can be used as a proxy for welfare, therefore changes in consumption can indicate a welfare gain or loss. Analysing borrowing looks at how credit markets are being used, and including impacts on arrears ensures our analysis focusses on vulnerable consumers and those with indicators of financial distress.

The period of high inflation and rising interest rates between mid-2021 and 2024 (known as the 'Cost of Living Crisis') has put a strain on many consumers' financial circumstances. Given this, consumers are more sensitive than usual to unexpected changes in income which could lead to poor financial outcomes. Using consumption as a proxy for welfare, this analysis investigates which income shocks are most costly, whether consumers can use savings to smooth out the impact of shocks, identifies drivers of demand for credit, and whether individuals may enter arrears of default on debt.

The FCA has a focus on ensuring that processes to help consumers cope with unexpected life events are in place and used appropriately. This analysis aims to identify circumstances that may lead to increases in debt, arrears and defaults following an income shock. These findings can also help to predict future credit demand and arrears expectations under different macroeconomic scenarios.

Key findings

We use data on consumers' expectations and financial outcomes during the period from Feb 2020 - May 2021 to determine the impact of income shocks on consumption, credit use and indicators of financial distress (arrears on credit products). The key findings of this analysis are:

1. Whether an income change is considered a shock, whether this is perceived as transitory or permanent, and whether the shock is positive or negative makes a substantial difference to the expected impacts on consumption, credit demand and arrears. This finding is consistent with other recent FCA analysis on employment shocks and financial difficulty, that concludes the specific type of employment shock has a material difference for consumer outcomes.
2. On average, consumers were resilient to negative income shocks. They made sensible financial decisions and efficient use of credit when experiencing income shocks; permanent negative shocks led to consumers cutting back consumption, whereas transitory negative income shock led to increased borrowing, but without increasing the probability of arrears. This demonstrates appropriate usage of credit by consumers and responsible lending by firms, which highlights the positive role of credit when consumers face unexpected changes in circumstance.
3. Consumers had gloomy expectations and consistently overestimated the risk of unemployment and the likelihood of being in arrears whilst underestimating income and hours worked. This may have led to more cautious behaviour such as limiting borrowing and consumption or increasing savings. This could also explain why consumers were relatively resilient, as they adjusted their behaviour to be naturally cautious due to the macroeconomic uncertainty.
4. Permanent income shocks significantly impact consumption and therefore welfare. A 10% permanent income shock leads to a 6.3% change in spending, whereas transitory income shocks are almost entirely smoothed away using savings and have no impact on consumption. This demonstrates which shocks are most costly for consumers and therefore when support may be most beneficial. The way in which this support is made available is important too. Insights from behavioural science show that both the processes and the communication approach can impact consumers' willingness to engage and follow through with action.
5. Typical consumers 'help themselves' by using savings to maintain welfare (proxied by consumption) when experiencing a transitory shock. This validates an underlying principle of FCA consumer legislation that consumers take responsibility for their financial decisions (2024). It demonstrates that a continued policy focus on consumer resilience through adequate savings can help minimise consumer harms following an income shock. A key implication of these findings is that those unable to use savings to smooth consumption may face challenging decisions, with options such as having to cut back on spending, use credit or turn to other forms of borrowing.
6. Demand for credit increases following transitory income shocks. A 10% positive transitory shock increases likelihood of borrowing by 3.7 percentage points (31%). Whilst counterintuitive, this is in line with existing empirical literature that

finds credit card balance increases are associated with positive employment shocks (Hundtofte et al., 2024). We found that whilst the shock was positive, this impact was driven by individuals losing less income than expected and therefore the fall in income may be the driving factor in requiring additional borrowing. Increasing credit demand is also reflected by increasing credit searches in the 3 months following a transitory negative shock. This supports understanding of the expected consumer response following a transitory income shock to ensure that individuals can appropriately access credit when it is needed.

7. Both permanent and transitory negative income shocks have no statistically significant impact on the probability of credit arrears. However, we do find that a 10% negative permanent income shock increases the self-reported *perceived* likelihood of being in arrears in the next 6 months by 2.25 percentage points, equivalent to a 50% increase. This shows that income shocks can impact expectations about future economic circumstances, even if having limited direct impact at a population level. This has implications for precautionary consumer behaviour that may be suboptimal for meeting their financial objectives, therefore support may be needed for these consumers as part of firms' responsibilities under the Consumer Duty.

Table 1 displays the imapct of income shocks on three consmer outcomes of consumption, new borrowing and the probability of being in arrears. This is a simplified summary of the statistically significant empirical results and should be used to understand the general direction of an impact. To understand the magnitude and nuances of the impact please refer to the empirical results section.

Table 1: Summary of income shock impacts

Type of shock	Direction of shock	Consumption	New borrowing	Probability of being in arrears
Transitory	Positive	No impact	**+**	**+**
	Negative	No impact	(+)	No impact
Permanent	Positive	**+**	No impact	No impact
	Negative	**-**	(-)	No impact
Anticipated	Positive	No impact	**-**	No impact
	Negative	No impact	+	No impact

(Note: Those in brackets are only significant at the 10% level)

Equality and diversity considerations

We have considered the equality and diversity issues that may arise from this Research Note.

Overall, we do not consider this Research Note to adversely impact any of the groups with protected characteristics i.e., age, disability, sex, marriage or civil partnership, pregnancy and maternity, race, religion and belief, sexual orientation, and gender reassignment.

2 Research context

Research objectives

We investigate how individuals respond to changes in income – both unexpected 'income shocks' and anticipated changes – with respect to their consumption, use of credit and ability to repay debt.

Specifically, we address three research questions:

1. How do income shocks affect consumption and what does this imply for welfare?
2. When are consumers able to use savings to smooth out income shocks?
3. How do consumers use credit in the face of income shocks? When do they borrow and when do they go into arrears?

Why is this relevant to the FCA? The short answer is that it helps the FCA meet its objectives as set out in legislation.

The FCA's objectives are to protect consumers, protect the integrity of the UK financial system, and promote effective competition in the interests of consumers. To deliver this, we need to understand when consumers are likely to need specific financial products, ensure that these products meet consumers' needs, and work to minimise the risk of harm if things go wrong – issues that fall directly under our operational objectives. As part of this, we place a special emphasis on consumers experiencing periods of vulnerability, the needs of consumers in such circumstances and any additional protections that might be appropriate.

The work described in this research note contributes directly to fulfilling this objective, focusing on one specific source of potential vulnerability, namely the loss of income. We make four main contributions. First, using consumption as a proxy for welfare, we investigate how costly different types of income loss are for consumers. This helps us understand when consumers may be at greatest risk of struggling financially. Second, we assess the extent to which consumers can "help themselves" in these circumstances, e.g. by using savings to maintain welfare through periods of income loss. Third, this work helps us understand credit usage and arrears – in particular, providing insight about when consumers are most likely to need to borrow and when they are most likely to fall behind on repayments and potentially need help. Finally, we can also use these results to help us predict future credit demand and arrears under different macro scenarios, something particularly helpful for our horizon scanning activities that aim to identify market changes or emerging risks.

Literature review

We summarise theoretical and empirical work on the impact of income changes on consumer outcomes. We discuss the predictions of the permanent income hypothesis and competing schools of thought. We then look at recent academic literature on the impact

of income shocks versus expected changes and how this impacts consumption, debt and arrears. We then focus on the uniqueness of the covid-19 pandemic, the period covered by our research, and summarise aggregate changes that occurred over this period.

Economic Theory

Building on Friedman's (1957) Permanent Income Hypothesis (PIH), Cappelli and Pistaferri (2010) set out a helpful framework for understanding what impact we would expect income changes to have on consumer outcomes, focusing primarily on spending behaviour. For unconstrained consumers (i.e. consumers who have savings or who can borrow at reasonable interest rates), anticipated changes in income should not, all else equal, affect spending patterns because their effect should already have been incorporated into spending behaviour. The impact that income surprises ("shocks") have should depend on their expected duration. Short-lived ("transitory") shocks should have minimal impact on spending as unconstrained consumers are able to use savings or borrowing to smooth out their impact. Longer-lasting ("permanent") shocks, on the other hand, will pass through to spending almost one-for-one. Constrained individuals without savings and who are unable to borrow may respond to negative anticipated changes and negative income shocks since maintaining the same level of consumption in the face of income loss is likely to imply dissaving or borrowing.

Competing theories suggest other reasons why spending may be more sensitive to current income than would be suggested by the PIH for unconstrained consumers. For example, present-biased preferences (Laibson, 1997) and forms of temptation (Gul and Pesendorfer, 2001) may help to explain why consumers respond more to transitory income shocks than the PIH would suggest. Various behavioural explanations may be important, e.g. framing, mental accounting and self-affirmation. Recent work by Colarieti et al. (2024) explore such alternative explanations in detail.

Transitory versus permanent changes

Most empirical work on the pass-through of income shocks has focused on their impact on spending. This is an enormous literature, much of it summarised in Jappelli and Pistaferri (2017) and Crawley and Theloudis (2024).

Several alternative empirical approaches have been used. The "covariance restrictions" approach was pioneered by Blundell, Pistaferri and Preston (2008), who use their results to examine the relationship between income and consumption inequality using UK data. They find transitory shocks have little or no impact on consumption, whereas around two-thirds of permanent shocks pass through to consumption. However, in low-wealth households they found significant sensitivity of consumption to transitory shocks.

An alternative approach is based on elicited ("subjective") measures of income expectations. Pistaferri (2001) uses this approach on Italian data, finding that 60% of permanent shocks pass through to consumption but for transitory shocks almost nothing passes through. He also shows these effects are the result of savings being used to smooth the transitory shocks but not the permanent shocks. Attanasio, Kovacs and Molnar (2020) also use subjective income expectations to study how income shocks are reflected in consumption. They find the impact of transitory shocks are not statistically different from zero, whereas permanent shocks have a coefficient of 0.29 (i.e. 29% of the income shock is reflected in changes in consumption).

More recent work has investigated heterogeneity in consumption responses to income shocks. One example is Arellano, Blundell, Bonhomme and Light (2023), who find that households respond differently to income shocks depending on factors such as age and wealth, but also upon unobserved factors.

Income shocks and debt

Fewer papers have considered the relationship between income shocks and debt, though there are some examples. Hundtofte et al. (2019) look at credit use in response to income shocks (using job loss as an example of an income shock). Using both US and Icelandic data, they do not find statistically significant changes in borrowing in response to unemployment shocks. Counterintuitively, they find the largest increase in credit card balances are associated with positive employment shocks. This leads to the conclusion that individuals adjust consumption to smooth debt balances, pointing to a procyclical response to income shocks compared to the countercyclical response predicted by economic models such as the PIH. Likewise, Keys et al. (2018) use US data to look at the impact of job losses on credit demand and supply after the 2008 financial crisis. They find that whilst credit demand increased due to adverse income shocks (countercyclical effect), this was dominated by a restriction of credit supply (procyclical effects).

Baxton et al. (2020) study the relationship between borrowing and employment status. They find that 44% of consumers have unused revolving credit prior to a job loss and that job losses do not have a significant impact on credit limits or credit scores within 5 years after the job loss. They find heterogeneity in the impacts of job loss, with unconstrained individuals (those in the top 2 quintiles of credit score) increasing borrowing to replace a significant proportion of lost income, and constrained individuals (those with credit scores in the bottom 2 quintiles) defaulting and reducing debt levels.

Recent analysis from the debt charity Step Change (2023) estimates that 73% of people in problem debt experienced an income shock in the last year. They also found that people in insecure work are twice as likely to experience a shock and that people were more likely to rely on credit to cope following multiple or sustained income shocks. They find that 68% of people that use credit to cope after an income shock fall into financial difficulty. Whilst helpful insights, this paper doesn't identify causal impacts from income shocks on debt outcomes. Baker (2015) shows that consumption in highly indebted households is more sensitive to income shocks, finding that these changes are driven by borrowing and liquidity constraints.

Unique Covid-19 shock

The Covid-19 pandemic had unique characteristics compared to others economic shocks. Large numbers of consumers experienced income shocks in circumstances such as a reduction in hours, being furloughed, losing a job, a reduction in tips or the loss of an expected bonus. For example, a total of 11.7 million jobs were supported by the Coronavirus Job Retention Scheme (CJRS) (AKA furlough) at various times (2021). However, in parallel there were also restrictions on activity, due to lockdowns, which significantly changed spending and consumption habits. The closure of many non-essential businesses between March and June 2020 in sectors such as hospitality, leisure, and retail restricted consumer choice and opportunities to consume. Additionally, policy interventions such as the furlough scheme and the introduction of payment holidays (temporary deferrals of debt repayments) were unprecedented.

A Joseph Roundtree Foundation report (2021) shows that in aggregate, household savings grew at the fastest pace on record and consumer debt fell from £154bn at the start of 2020 to £143bn in April 2021. Whilst the aggregate picture shows a clear improvement in household finances, there has been varying impacts across different demographic groups. A Bank of England report (2021) highlights that even with support, low-income households are less likely to have seen a recovery in incomes through 2020 and 2021. High-income households generally accumulated savings throughout the pandemic whilst low-income households, with a higher proportion of essential spending, were less likely to have saved.

Our analysis adds to the existing literature by utilising a subjective expectations methodology (Pistaferri 2001, Attanasio et al 2020) to assess the impact of income shocks on a variety of consumer outcomes including consumption, borrowing and indicators of financial distress. Our approach also addresses measurement error issues inherent in survey data that is likely to have affected earlier work. In addition, our analysis builds on the understanding of aggregate UK impacts from the Covid-19 pandemic by estimating causal impacts of income changes on individuals. Literature findings guide our analysis by hypothesising that different types of income shock may have varying impacts on individuals, and therefore require a tailored response from firms to protect vulnerable consumers appropriately.

3 Data

Matched survey and credit file data

Results in this research note are based on a five-wave rolling panel survey the FCA conducted during the Covid-19 pandemic. The aim of this survey was to understand the impact of the Covid-19 pandemic on consumers' finances and the extent to which the FCA's payment deferral policy was helping to alleviate financial pressures. Waves were collected on a quarterly basis between May 2020 and May 2021, with pre-pandemic (February 2020) baseline information collected the first time an individual was interviewed.

For context, at the February 2020 baseline there were only a handful of Covid-19 cases in the UK. By the May 2020 survey, the UK was in lockdown. For the August 2020 wave, many of the restrictions had been lifted. There were further lockdowns for the November 2020 and February 2021 surveys, but these had largely lifted by the time of the final wave in May 2021.

During this time there were also a range of policy interventions to support individuals through challenging circumstances. These included the furlough scheme to support those that who were restricted from work during periods of lockdown, forbearance measures that support individuals who are in financial difficulty, and payment holidays for mortgage holders facing payment difficulties.

The survey asked questions about a wide range of consumer financial outcomes and demographics, including employment, income, spending, borrowing and use of payment holidays. Particularly notable is that we collected information on the following:

- Income from employment, self-employment and other sources
- Expectations about future employment and earnings
- Total spending and spending broken down into categories
- Comprehensive measures of constraints facing individuals (liquid savings, access to credit, refused credit applications, family they could borrow from)

In addition, we asked for permission to link to other data sources held by the FCA. This includes credit files and current account data that gives us detailed information about borrowing, repayments, and arrears, and allow us to calculate alternative measures of income and spending that may suffer less from measurement error than self-reported counterparts.

We surveyed a representative sample of the UK adult population by age, gender and region. For the August 2020 wave, we oversampled individuals who had taken out a mortgage payment holiday to ensure sufficient sample to analyse the impact of this policy measure; otherwise, there was no oversampling.

The survey was implemented using the Qualtrics platform and delivered online to respondents provided by the survey company Dynata, with participation incentivised via

rewards. Interviews took an average (median) of 15.5 minutes to complete (including any breaks taken by respondents).

In the first wave, we received 7,300 completed interviews. In each subsequent wave, we re-interviewed as many individuals from the previous wave as we could, with top-up sample added to meet the target sample size at each wave of around 7,250 (the only exception to this was the final wave where no new sample was added). Across the five waves of the survey a total of 16,790 unique individuals were interviewed, and the average reinterview rate was 55% (this is the average proportion of people interviewed at one wave who were successfully reinterviewed the following wave).

For respondents who consented, these survey data were matched at the individual level with monthly credit file data from one of the three largest credit reference agencies (CRAs) operating in the UK. This CRA data contains rich and granular data on the liabilities side of an individual's personal balance sheet. Of the total 16,790 individuals interviewed, we successfully matched 7,424 of these.

The CRA data contains account-level information on credit products owned, their type (e.g., revolving, mortgage, personal loan etc.) as well as data on balances outstanding and scheduled repayment amounts. Crucially, the data also contains factors documenting the monthly performance of individuals credit files, indicating any missed payments.

Defining income shocks and arrears

We measure the income shock experienced by an individual at time t as the difference between their realised income at time t and what they expected their time-t income to be as at time $t-1$. In symbols:

$$S_t = Y_t - E_{t-1}[Y_t]$$

where S_t is the shock at time t, Y_t is realised income at time t and $E_{t-1}[Y_t]$ is expected time-t income from the perspective of time $t-1$.

Income shocks can be further decomposed based on how long the shock is anticipated to last. In line with previous work, we assume that the total shock can be thought of as the sum of a short-lived ("transitory") shock expected to dissipate by next period, and a longer-lived ("permanent") shock expected to persist:

$$S_t = \zeta_t + \varepsilon_t$$

where ζ_t is the permanent shock and ε_t is the transitory shock. Under this assumption, we can recover the permanent shock as the difference in expectations across time:

$$\zeta_t = E_t[Y_{t+1}] - E_{t-1}[Y_t]$$

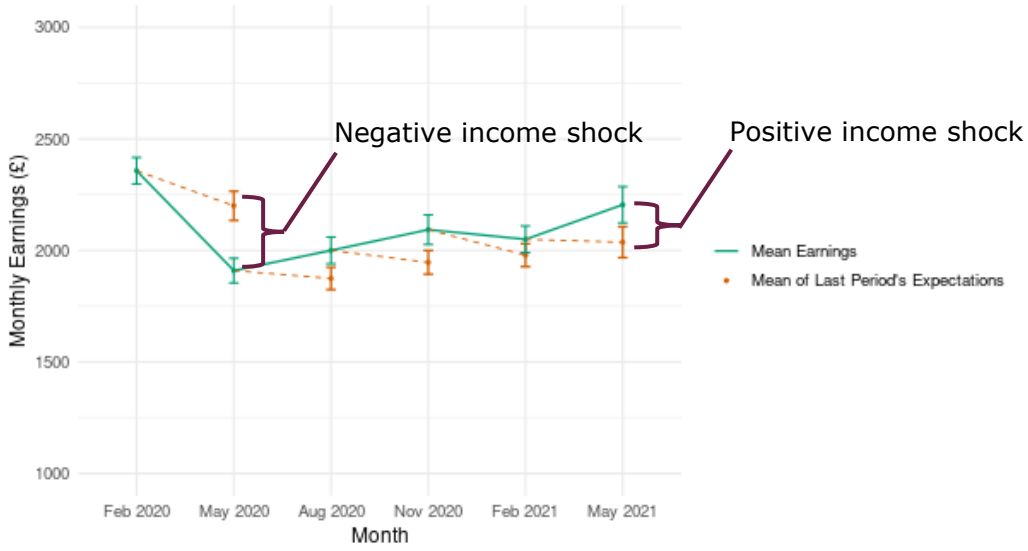
and the transitory shock as the difference between the outturn today and expectation next period:

$$\varepsilon_t = y_t - E_t[Y_{t+1}]$$

(Adding these two shocks together recovers the equation for the total shock above). We measure shocks at a quarterly horizon. To give a concrete example, suppose a consumer is paid £100 less in tips this quarter than they were expecting. If they expect 40% of the shortfall to persist to next quarter and 60% to have recovered, then they experienced a £40 permanent shock and a £60 transitory shock.

Income shocks are displayed graphically in Figure 1. Using consumer estimates in Feb 2020 of their expected income in May 2020 and comparing to realised income in May 2020 shows that, on average, consumers experienced a negative income shock in May 2020, i.e. their expectations were higher than their realised income. In all subsequent periods, consumer expectations were below realised income, therefore consumers experienced positive income shocks, on average.

Figure 1: Income shocks



In regressions reported below, we sometimes include an additional term, which is the anticipated change in income. This is measured as the difference between what the individual expected their time-t income to be as at time $t-1$ and their realised income at time $t-1$:

$$A_t = E_{t-1}[Y_t] - Y_{t-1}$$

Adding together the shock, S_t, and the anticipated change, A_t, gives the total realised change in income between $t-1$ and t.

Some of our measures of borrowing and arrears are self-reported in the survey, while others rely on the matched credit file data. In the latter case, we use the same definitions of arrears as a recent FCA paper on job losses and financial distress (FCA, 2024). Specifically, we count anyone as being in arrears or default if they are in arrears or default on any of their credit products in a given month. Descriptive analysis

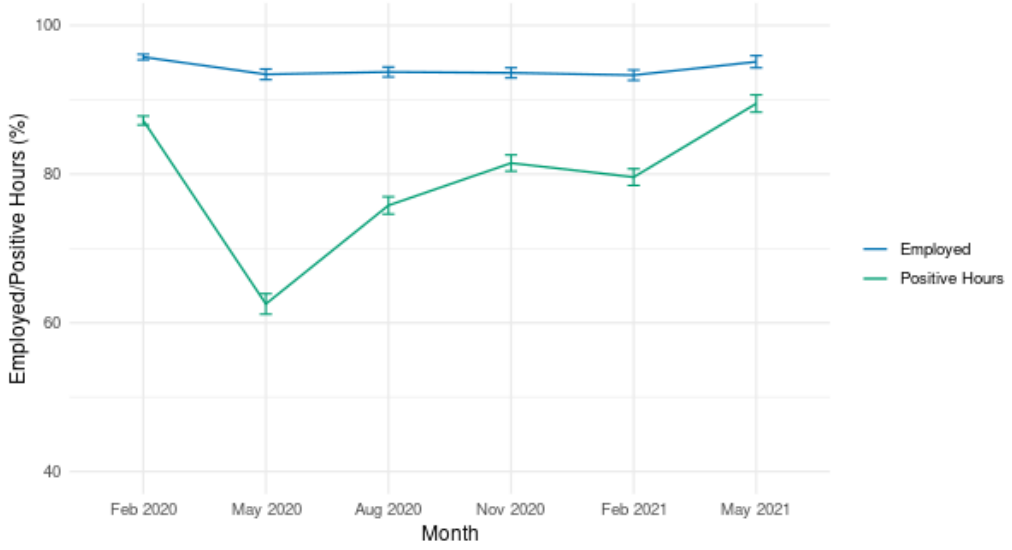
To draw sensible conclusions from our later causal analysis, it is important to understand the period our data covers and the sorts of income, consumption, borrowing and arrears changes consumers were experiencing during this time. In this section, therefore we describe the dynamics of these variables over the period from Feb 2020 to May 2021.

We reweight to account for oversampling within waves. For analysis of earnings, borrowing, debt and arrears we filter the data to include only individuals in work during the period. For analysis of job status and employment we use the full sample, regardless of employment status. The descriptive statistics help to contextualise the estimates in our causal analysis and provide confidence that our data is in line with other macroeconomic estimates from the period.

Employment and earnings during the pandemic

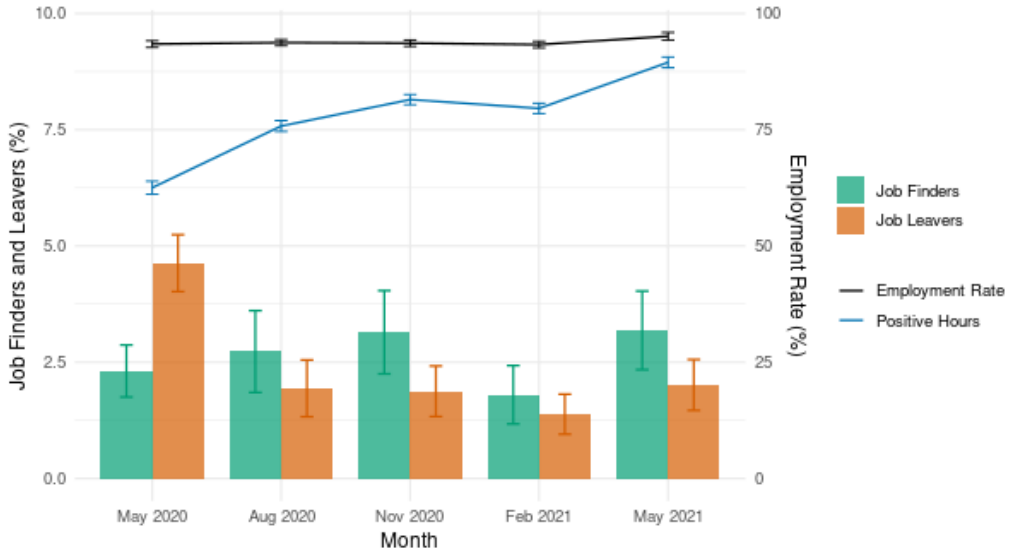
Despite the upheaval caused by the pandemic, the employment rate (reflecting the percentage of the labour force reporting employment) remained relatively stable within our sample. However, there was a significant decline (~24 percentage points) in the percentage of individuals reporting a positive number of hours worked between February and May 2020. This disparity can be attributed to the Coronavirus Job Retention Scheme, which compensated people whose job was affected by lockdown, particularly during the pandemic's early stages.

Figure 2: Share of individuals reporting employment and a positive number of hours worked



Examining trends in job finders and job leavers offers additional insights into the labour market dynamics amidst the pandemic. Initially, the onset of the pandemic triggered a pronounced surplus of job leavers compared to job finders. However, this imbalance rapidly dissipated with the number of job leavers decreasing, leading to overall stability in employment dynamics. Similarly, the percentage of positive hours worked gradually recovered over the period (See Figure 3).

Figure 3: Percentage of job finders, job leavers, employed, and reporting positive hours worked



Our analysis reveals a significant downturn in mean monthly earnings in the initial months of the pandemic, from £2,357 to £1,910 (19% fall) between Feb and May 2020. Earnings subsequently stabilised and partially recovered up to May 2021. Notably, the most substantial fluctuations in earnings were observed at the tails of the distribution, particularly evident in the 10th percentile (Figure 5), underscoring potential vulnerabilities that could warrant attention in future macroeconomic shocks.

Figure 4: Monthly earnings

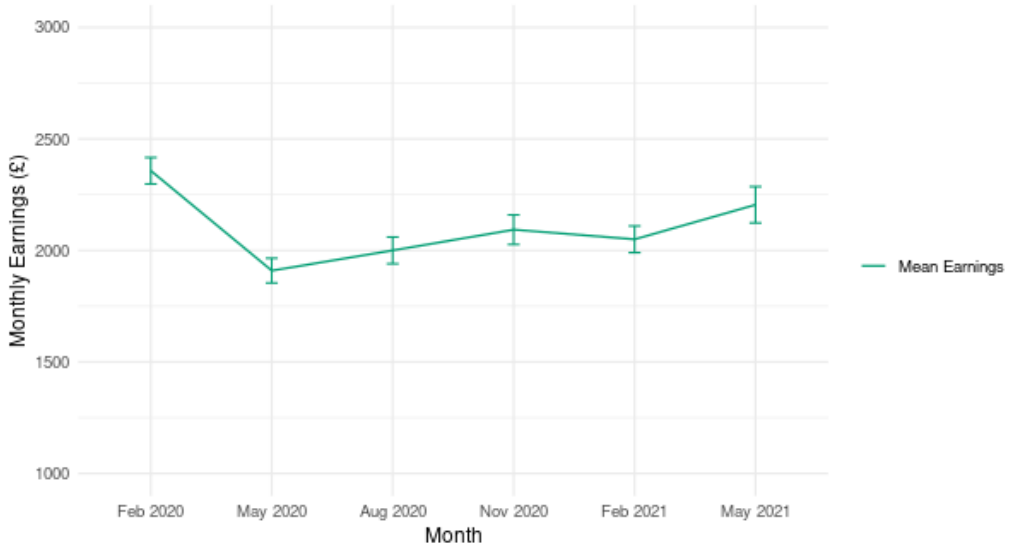
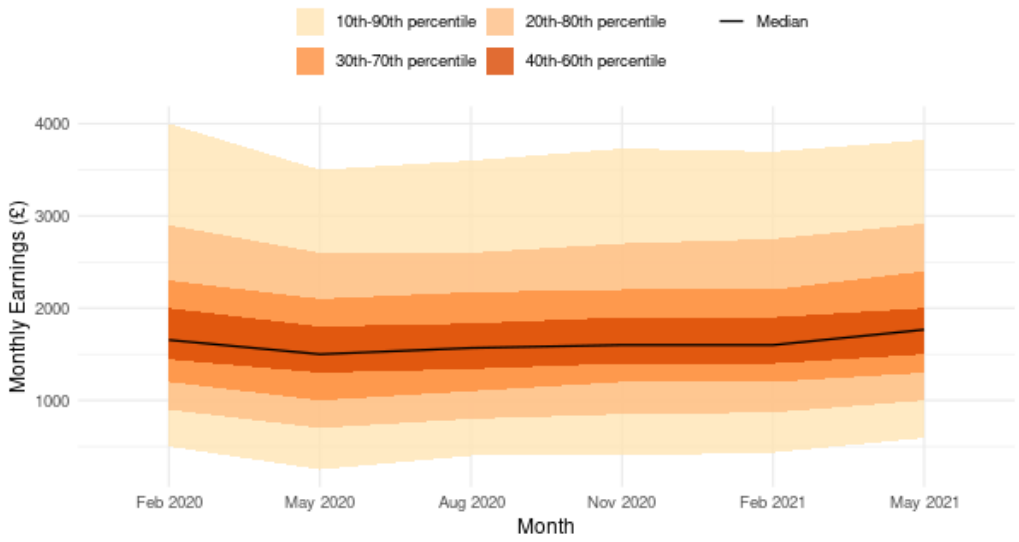
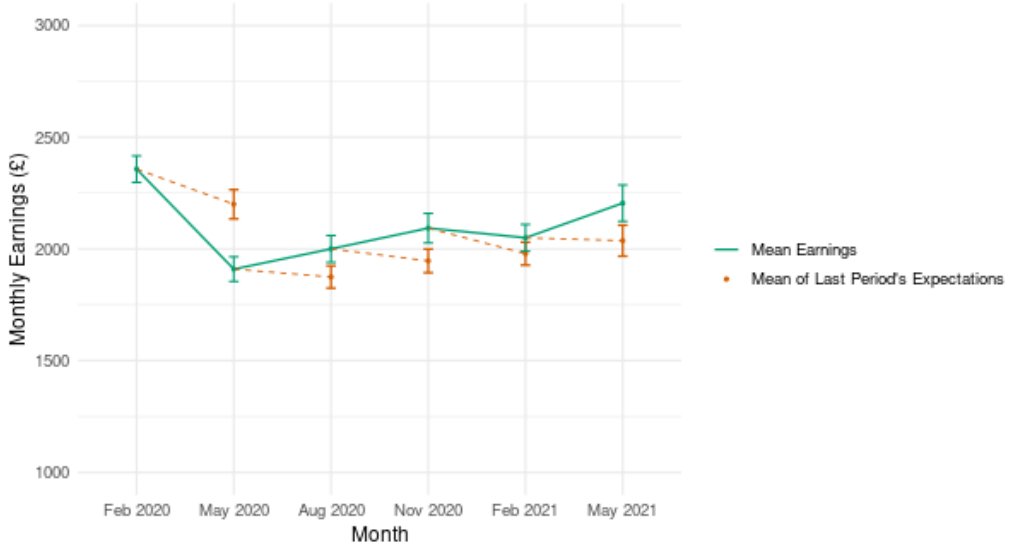


Figure 5: Monthly earnings, by earning percentile



Our data also allows us to observe consumers' expectations in any given period over a 3, 6, 9, and 12-month horizon. We focus on 3-month ahead expectations. Initially, consumers were caught off guard by the magnitude of the negative earnings decline between February and May 2020. Subsequently, a persistent trend emerged, with consumers consistently underestimating their future earnings (Figure 6). These findings may be generalisable to other large economic shocks. When faced with a big economic shock, consumers have negative lagged effects on income expectations during the recovery. This could lead to excessive demand for credit when it is not required or slower repayment of credit balances leading to increased total interest repayments.

Figure 6: Monthly earnings, expectations and outturn



Similarly, pessimism characterised expectations regarding employment. Consumers consistently anticipated lower levels of hours worked compared to realised hours. Whilst potentially generalisable to other economic shocks, the covid-19 pandemic had unique

restrictions on work that mean findings on hours worked are potentially specific to this period. Discrepancies were also observed between expectations and outcomes of employment, with employed individuals overestimating the likelihood of job loss (Figure 8) while the unemployed exhibited higher expectations regarding job prospects compared to actual job-finding outcomes (Figure 9). This is in line with previous findings from the literature and may have implications for individuals' interactions with support services. If consumers overestimate the likelihood of entering employment, they may not consider financial support as necessary. This group may be underserved by support services or might need a proactive approach rather than be expected to seek support.

Figure 7: Positive number of hours worked, expectations and outturn

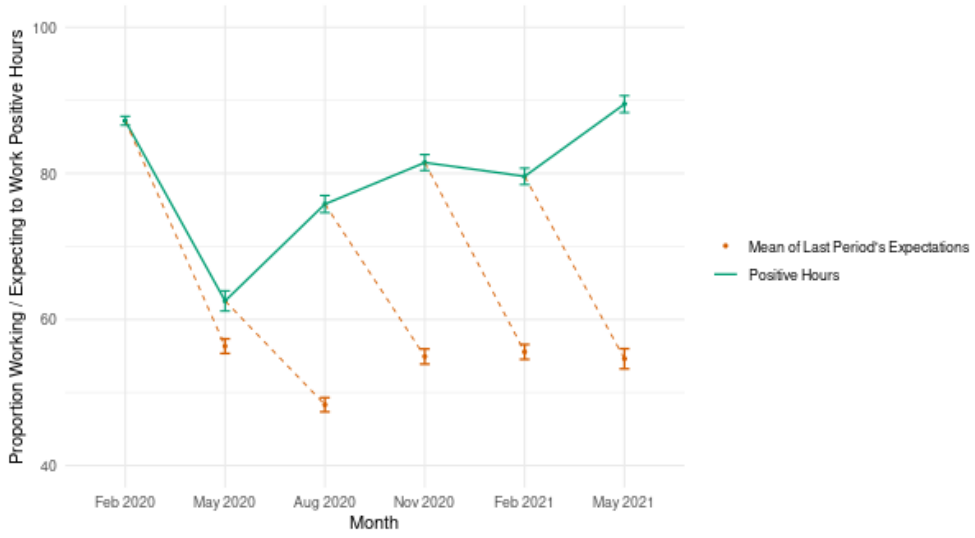


Figure 8: Job leaving, expectations and outturn

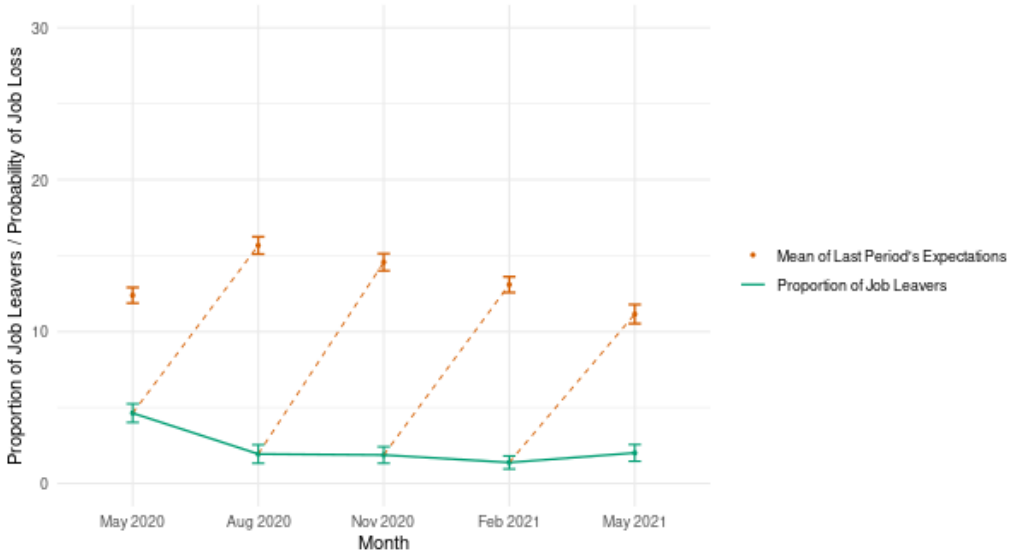
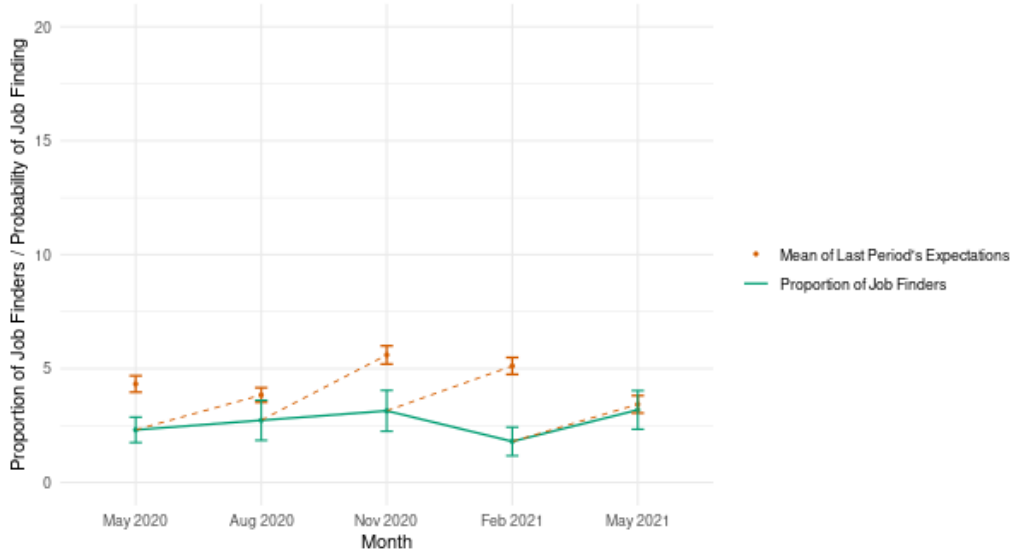
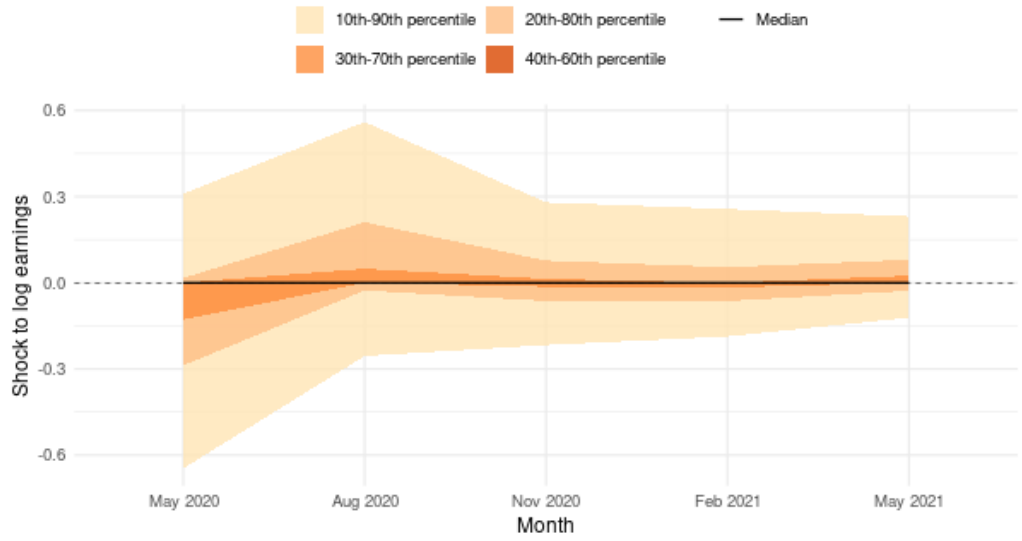


Figure 9: Job finding, expectations and outturn



Using our data on expectations, changes in income can be decomposed into unexpected changes (or "shocks") and anticipated changes. Figure 10 plots shocks experienced by consumers across various percentiles. We can see that at the start of the pandemic, some individuals experienced very large shocks (in particular, the 10th and 90th percentiles). These shocks differed quite significantly across consumers, with some experiencing large positive shocks and others even larger negative shocks. In May 2020, the 10th percentile received earnings more than 60% lower than they had expected, while the 90th percentile received earnings 30% higher than expected. From November 2020, expectations became more precise and the dispersion in shocks narrowed.

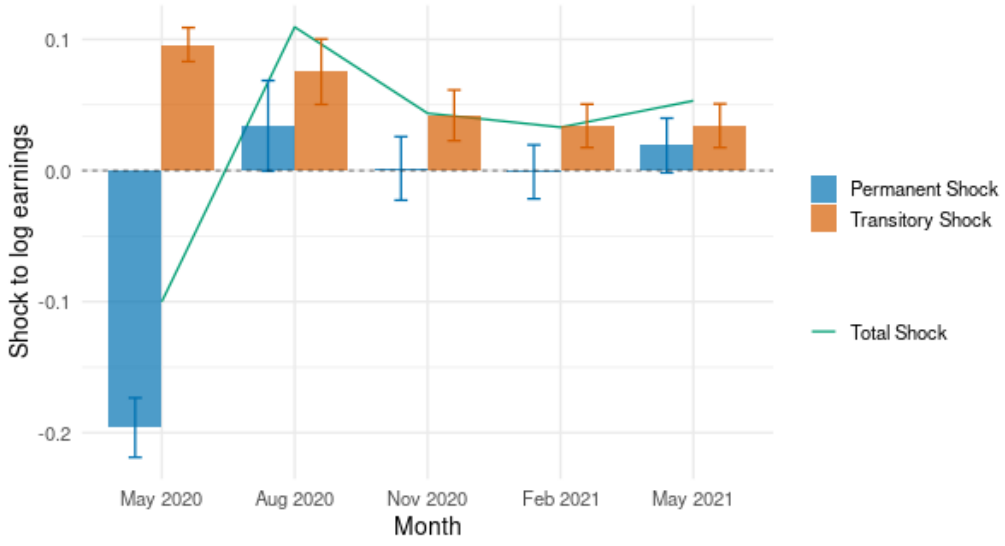
Figure 10: Monthly shock to log earnings, by shock percentile



In Figure 11, we plot average total shocks to log earnings and their decomposition. We can see that in May 2020, the pandemic led to a large negative permanent shock. However, as individuals adjusted their expectations downward after that date, they

consistently experienced positive total shocks, primarily perceived as transitory, reflecting a pattern of continuous surprise as outcomes surpassed initial expectations. These findings set the context for analysing permanent and transitory shocks in the empirical results section. Results should be interpreted with the understanding that permanent negative shocks were experienced most intensely in May 2020.

Figure 11: Monthly total, permanent, and transitory shock to log earnings

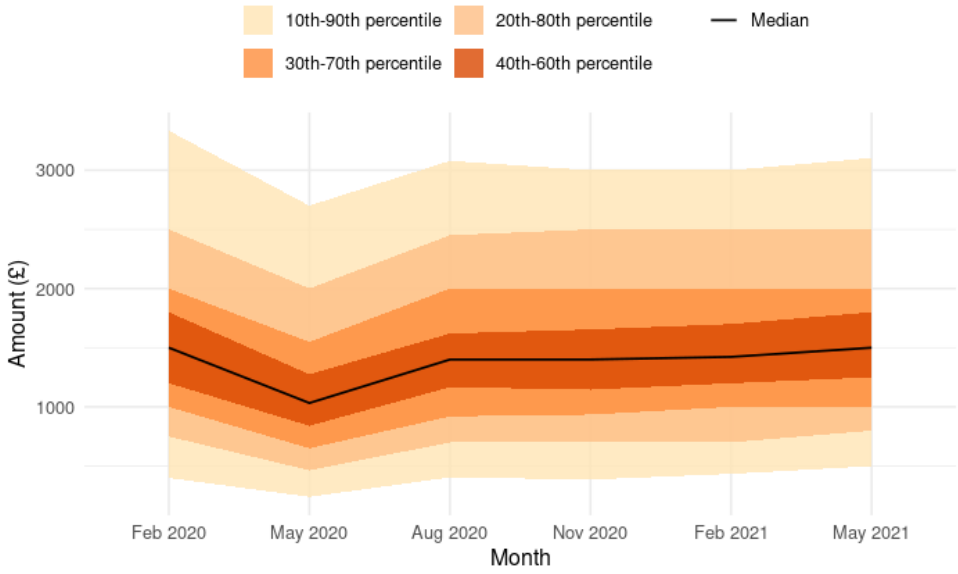


Spending during the pandemic

Spending and consumption are often considered by economists as a proxy for welfare (Deaton and Muellbauer, 1980) and so can be used to approximate the welfare cost of events such as the loss of income. All else equal, higher consumption is considered as a welfare gain. The pandemic period was unique because some consumption opportunities were temporarily restricted (e.g. hospitality). This means that changes in consumption during this period may be a poorer proxy for welfare. In the regression analysis we conduct below, we attempt to address this to some degree by comparing two groups of individuals, with only one of the two facing income changes during the pandemic. By comparing how spending changes differed between these groups we can control for some of the covid-19 specific impact on consumption. Therefore, we still get a good sense of the welfare implications of income loss even though the period in question was unusual.

Monthly family spending fell in May 2020, coinciding with the onset of the pandemic and the first lockdown restrictions. By August 2020 median family spending had rebounded to near pre-pandemic levels and remained constant across the rest of the period. Larger changes were experienced at higher spending percentiles, but the overall trend was similar across the spending distribution. Median family spend decreased by ~26% from Feb to May 2020, which is more than the 19% fall in average income over the same period.

Figure 12: Monthly family spend, by spend percentile



Credit use and arrears during the pandemic

We analyse changes in debt and arrears levels during the pandemic using both self-reported measures and administrative CRA data. We breakdown our analysis by demographic group where sample sizes allow, and the findings are insightful.

Median debt levels increased between May and August 2020; however this increase was temporary, and they returned close to pre-pandemic levels by May 2021. Mean debt levels decreased from ~£39k in May 2020 to £35k in May 2021. Unsecured debt levels for those with high debt (90th percentile) fell below pre-pandemic levels from £11,300 in August 2020 to £8,700 in May 2021.

Figure 13: Total debt, by debt percentiles

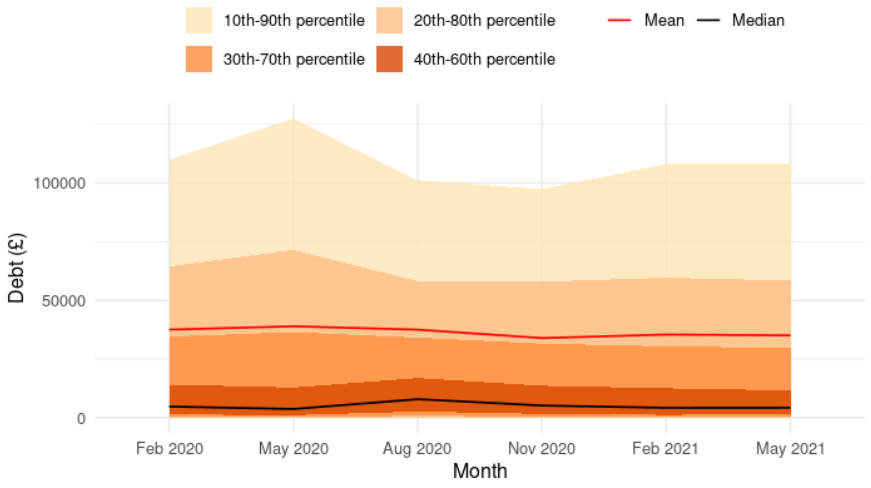
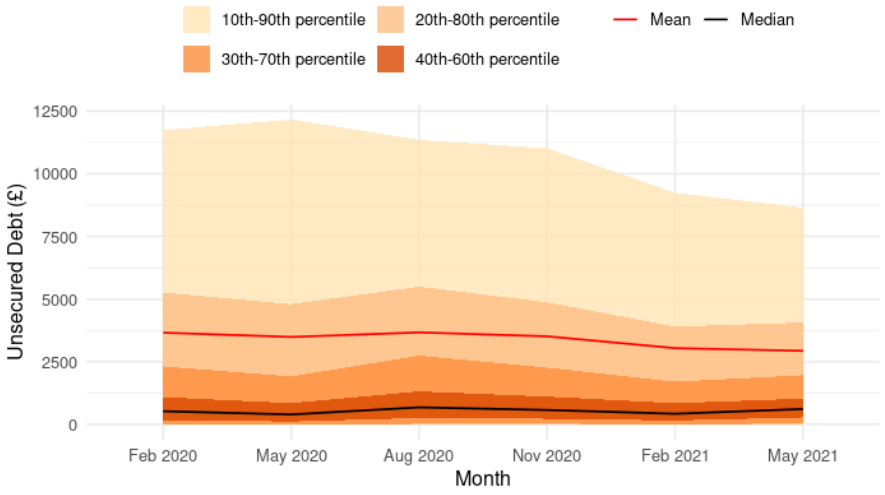


Figure 14: Total Unsecured debt, by debt percentile



Findings in

Figure 15 show the self-reported probability of taking on new borrowing in the previous 3 months increased from 15% to 19% between May and August 2020, but then fell back to 16% in the subsequent waves. Mean self-reported borrowing amounts also increased between May and August 2020 but remained at elevated levels through to May 2021 (Figure 16).

Figure 15: Probability of new borrowing (Self-reported, previous 3 months)

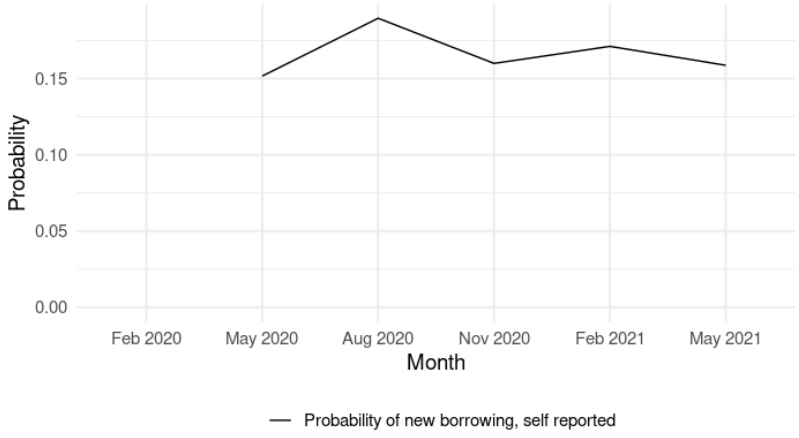


Figure 16: New borrowing amount (Self-reported, previous 3 months)

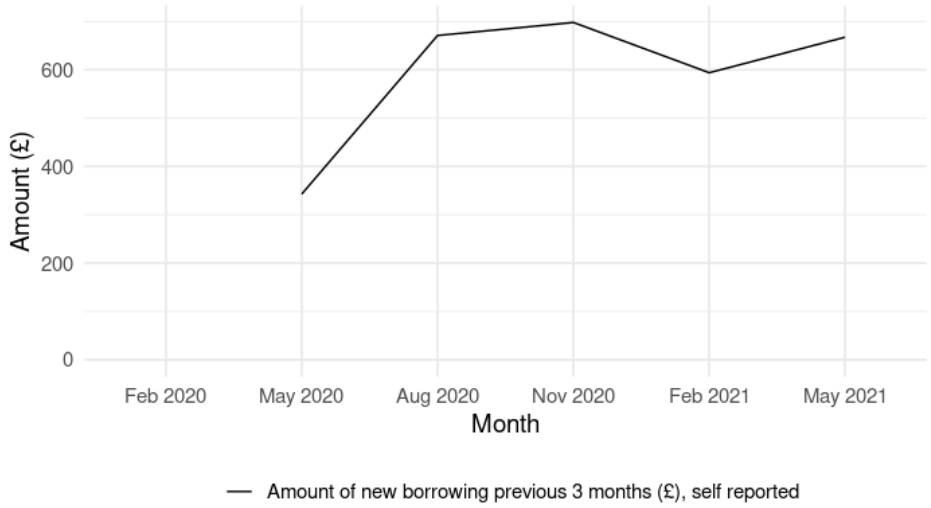


Figure 17 and Figure 18 analyse average debt levels by ethnicity and age demographics. They illustrate the variety of changes in debt levels during the pandemic. On average, individuals in the Black and Other/Unknown ethnic groups experienced a much larger increases in debt between August and November 2020. Higher debt levels were also more persistent for Black individuals than other ethnic groups. With respect to age, mean debt levels fell for all age groups. Over the entire period, the largest falls in debt were experienced by those in the 45-54 and 65-75 age band.

Figure 17: Mean unsecured debt levels, by ethnicity

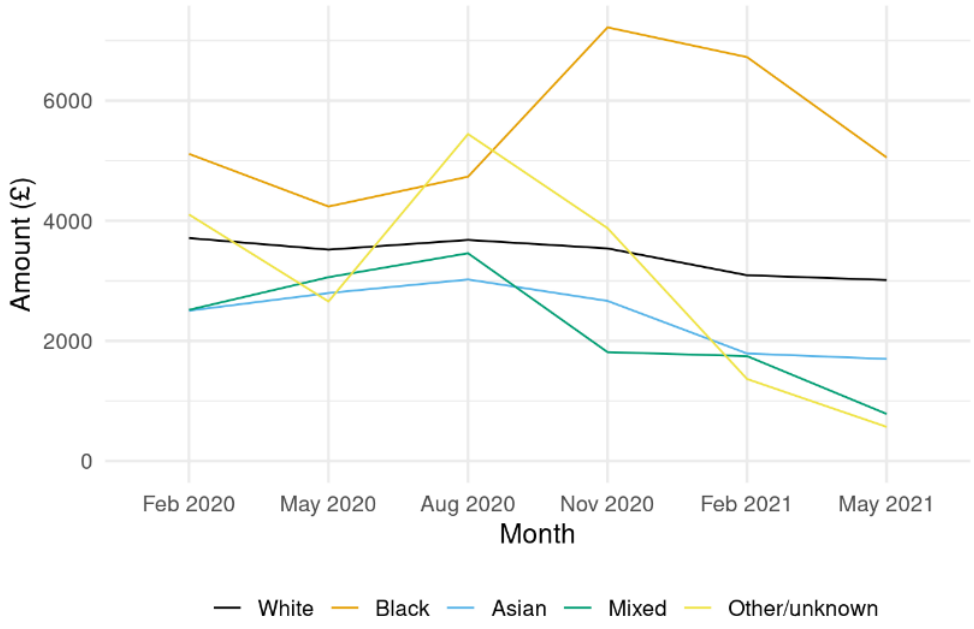
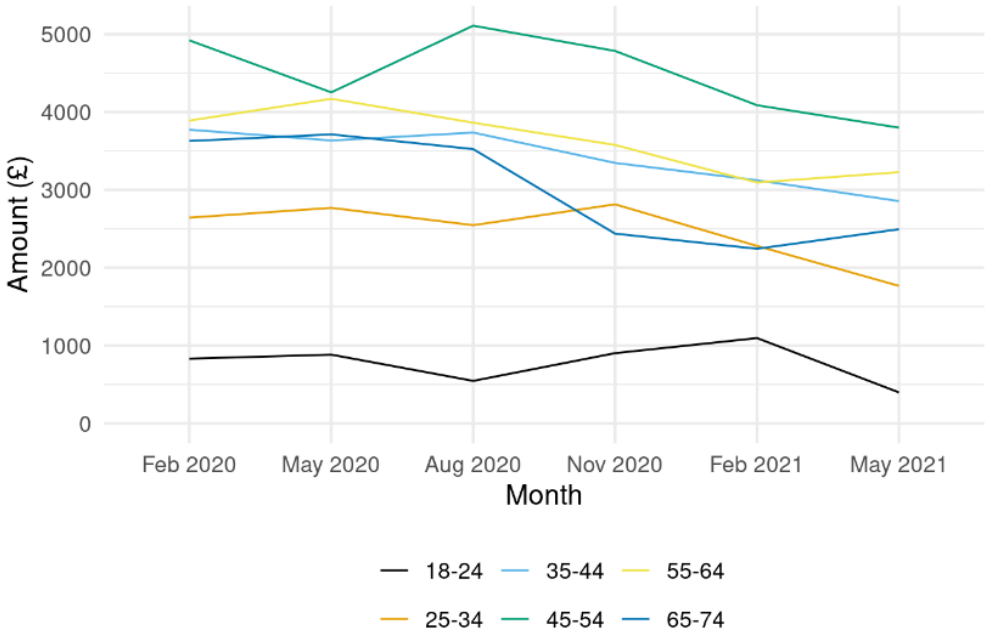


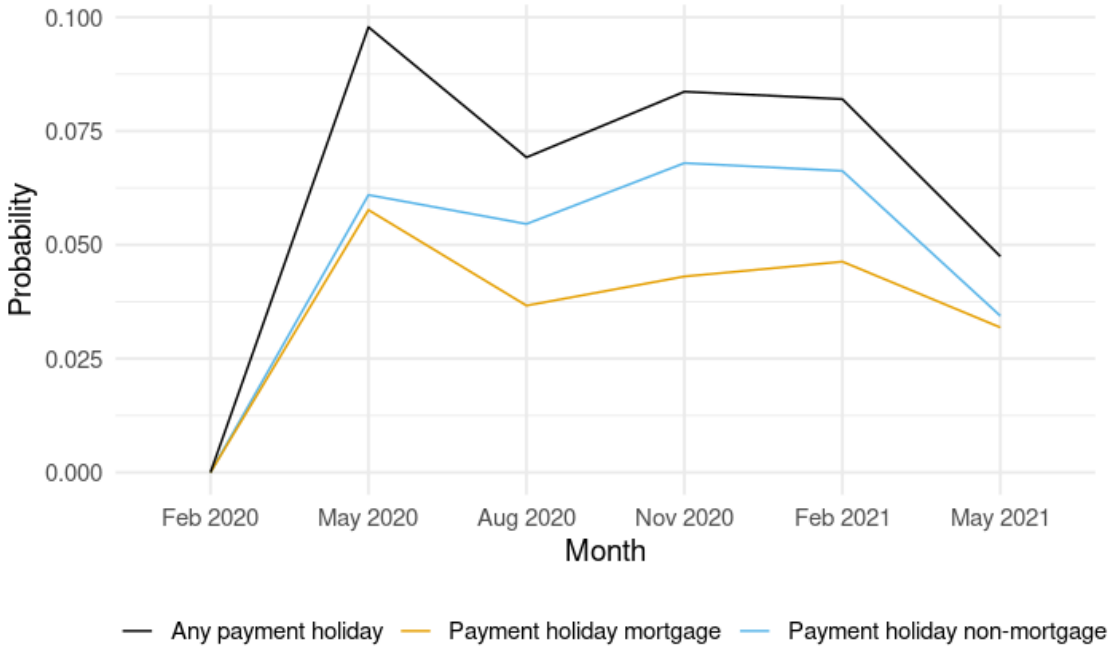
Figure 18: Mean unsecured debt levels, by age band



New credit product openings are another measure of credit demand. The probability of opening new credit products increased from an average of 4.5% to 6.0% between Feb 2020 and May 2021 (Figure 19). This is surprising, taken in the light of total and unsecured debt levels decreasing over the period, however, may be explained by some individuals facing income shocks due to the pandemic. The opening of new credit products varied by demographics such as age, ethnicity, and housing tenure but there were no clear trends.

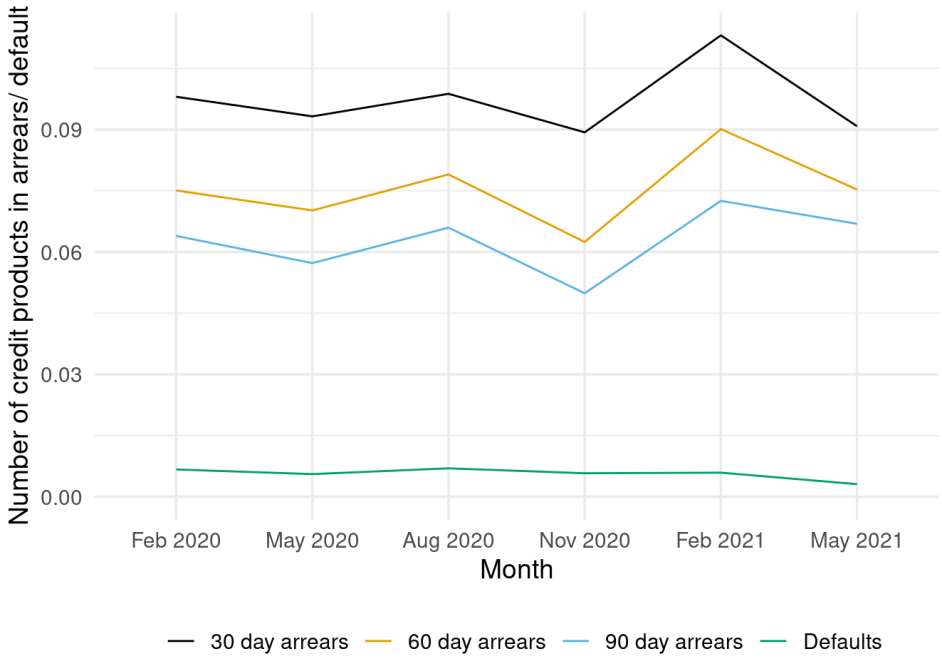
Payment holidays were introduced as part of the FCA's forbearance measures and can be used to pause payments on credit products, when an individual's financial circumstances change, without going into arrears. Displayed in Figure 19, the probability of having a current payment holiday on any credit product rose from 0% to 9.8% between Feb and May 2020. From then, it declined consistently to a rate of 4.7% by May 2021. The FCA Financial Lives Survey (2020) estimated that 17% of adults had taken a payment holiday on their mortgage by October 2020 and 4% had taken a rental payment holiday. The discrepancy between these measures indicates that the individuals taking payment holidays vary over time, meaning the results are reasonably consistent.

Figure 19: Probability of payment holidays



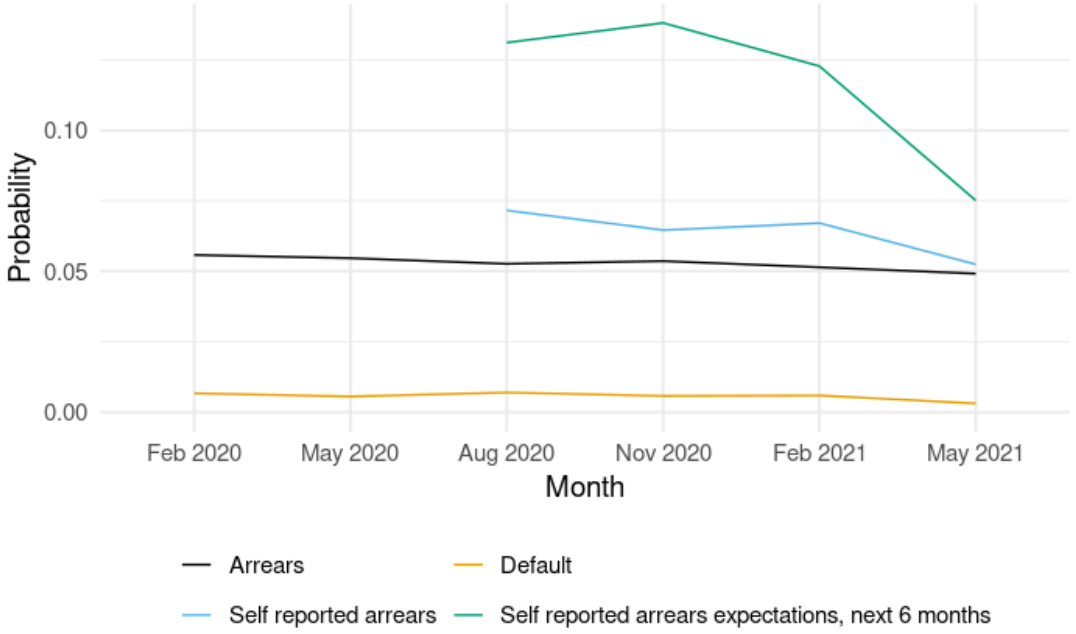
Arrears and defaults identify where consumers are unable to meet their credit repayments and may indicate financial distress. The average number of credit products in 30-day arrears fell over the period, whilst 60-day arrears stayed the same and 90-day arrears increased slightly. Arrears were lowest in November 2020 but have risen since. The average number of credit products in default was consistent over the period before declining in May 2021.

Figure 20: Average number of credit products in arrears or default



When comparing the probability of being in arrears or defaults from the CRA data with the self-reported measure they are relatively consistent. The probability of arrears falls from 5.1% to 4.9% over the period, which is a consistent story with falls in self-reported arrears (fall from 7.2% to 5.2%) although less pronounced in the administrative data. The probability of defaults fluctuates between 0.3-0.7% with no consistent pattern. Expectations about the likelihood of falling into arrears within the next 6 months were consistently higher than the actual probability of being in arrears, showing that there is uncertainty about future financial circumstances and expectations are overly pessimistic regarding the probability of arrears. This finding of pessimistic expectations is also reflected in the expectations of future income during a large economic shock.

Figure 21: Probability of being in arrears or default and consumer expectations



Overall, the descriptive analysis shows a relatively positive picture for debt and arrears rates over the pandemic period. Whilst there has been volatility as individuals responded to the pandemic, average debt levels have fallen for all debt percentiles, age bands and ethnic groups. Most arrears and default rates have also decreased. This analysis focusses on averages within demographic groups and therefore may not identify where specific sub-groups or individuals had worse financial outcomes.

4 Methodology

Empirical approach

The empirical approach taken in this Research Note builds on the frameworks used by Pistaferri (2001) and Attanasio et al. (2020), which also use expectations data to identify the income shocks that individuals face.

Specifically, we estimate regressions of the form:

$$\Delta c_t = \phi_1 \zeta_t + \phi_2 \varepsilon_t + \beta' X_t + v_t$$

where Δc_t is the percentage change in spending (or, more precisely, the change in log spending), ζ_t and ε_t are the permanent and transitory shocks to income in percentage terms (log changes), X_t are covariates important for explaining changes in spending unrelated to income shocks (based on literature, we use age and number of children) and v_t is the error term. The key parameters of interest are ϕ_1 and ϕ_2, which measure the pass through of permanent and transitory income shocks to spending.

In some regressions, we consider different outcomes, such as credit searches, new borrowing, and arrears. We also run some specifications where we investigate whether these outcomes respond to anticipated changes in income.

A key issue with running this sort of regression based on survey data is that measurement error in the income shocks is likely to distort parameter estimates (see e.g. Wansbeek and Meijer, 2003). Measurement error is defined as the difference between the measured amount and its true value e.g. responding to a survey stating they earn more or less than they do in reality. With more than one explanatory variable measured with error, we cannot be sure which direction the bias goes in without further information about the nature of measurement error and the correlations between the underlying variables measured without error (see above reference), but it might be reasonable to expect that parameter estimates to be biased towards zero if measurement error is ignored.

To address problems caused by measurement error, we use an instrumental variables strategy – a common approach in economics for dealing with this kind of problem. This involves using other variables ("instruments") that are correlated with the permanent and transitory income shocks but are not correlated with the measurement error. We can use these instruments to strip out the effect of the measurement error, leaving us with estimates that reflect the true effect of the shocks on spending decisions. We can express the ideas behind this approach using equations:

$$\begin{aligned} \zeta_t &= \gamma_{\zeta 1} Z_1 + \gamma_{\zeta 2} Z_2 + \beta'_\zeta X_t + u_{\zeta t} \\ \varepsilon_t &= \gamma_{\varepsilon 1} Z_1 + \gamma_{\varepsilon 2} Z_2 + \beta'_\varepsilon X_t + u_{\varepsilon t} \\ \Delta c_t &= \phi_1 \hat{\zeta}_t + \phi_2 \hat{\varepsilon}_t + \beta' X_t + v_t \end{aligned}$$

The first two lines are called "first-stage" regressions: these are least-squares regressions of the permanent or transitory shock (measured with error) on the instruments (the variables Z_1 and Z_2 – for simplicity here we assume there are only two) any other explanatory variables (X_t). The final line is the "second-stage" least squares regression where we regress the change in spending on predictions for the permanent and transitory shocks (indicated by the "^" over the variables) based on the first-stage regressions.

For the instrumental variables approach to work, at a high level we need three conditions to hold. First, we need the instruments to be predictive of the shocks. Second, we need the instruments to only impact the outcome variable through the income shock (exclusion restriction). Third, any measurement error in the instruments must not be correlated with measurement error in the shocks. The instruments we use are indicator variables for gender, time period and sector of employment, the change in hours and dummies giving the reason, a flag for ever having been furloughed and expectations over how long it is likely to take for earnings to recover after any shocks that were experienced. Given the pandemic period was characterised by significant shocks affecting particular sectors and types of employment, it seems likely that these instruments will have significant predictive power. We also think that the instruments are unlikely to be subject to significant measurement error, so the risk of a correlation with measurement error in the shocks is minimised.

One issue that can arise as the number of instruments increases, is that it can result in small-sample biases. To assess sensitivity to this issue, we run some regressions based on the double/debiased machine learning (DDML) approach proposed by Chernozhukov et al. (2018). Central to this approach is its use of "sample splitting", which avoids biases as the number of instruments increases. The downside of this approach is potentially larger standard errors.

5 Results

Summary findings

The key findings of this analysis are:

1. Whether an income change is considered a shock, whether this is perceived as transitory or permanent, and whether the shock is positive or negative makes a substantial difference to the expected impacts on consumption, credit demand and arrears. This finding is consistent with other recent FCA analysis on employment shocks and financial difficulty, that concludes the specific type of employment shock has a material difference for consumer outcomes.
2. On average, consumers were resilient to negative income shocks. They made sensible financial decisions and efficient use of credit when experiencing income shocks; permanent negative shocks led to consumers cutting back consumption, whereas transitory negative income shock led to increased borrowing, but without increasing the probability of arrears. This demonstrates appropriate usage of credit by consumers and responsible lending by firms, which highlights the positive role of credit when consumers face unexpected changes in circumstance.
3. Consumers had gloomy expectations and consistently overestimated the risk of unemployment and the likelihood of being in arrears whilst underestimating income and hours worked. This may have led to more cautious behaviour such as limiting borrowing and consumption or increasing savings. This could also explain why consumers were relatively resilient, as they adjusted their behaviour to be naturally cautious due to the macroeconomic uncertainty.
4. Permanent income shocks significantly impact consumption and therefore welfare. A 10% permanent income shock leads to a 6.3% change in spending, whereas transitory income shocks are almost entirely smoothed away using savings and have no impact on consumption. This demonstrates which shocks are most costly for consumers and therefore when support may be most beneficial. The way in which this support is made available is important too. Insights from behavioural science show that both the process and the communication approach of a 'customer journey' for support can impact consumers' willingness to engage and follow through with action.
5. Typical consumers 'help themselves' by using savings to maintain welfare (proxied by consumption) when experiencing a transitory shock. This validates an underlying principle of FCA consumer legislation that consumers take responsibility for their financial decisions (2024). It demonstrates that a continued policy focus on consumer resilience through adequate savings can help minimise consumer harms following an income shock. A key implication of these findings is that those unable to use savings to smooth consumption may face challenging

decisions, with options such as having to cut back on spending, use credit or turn to other forms of borrowing.

6. Demand for credit increases following transitory income shocks. A 10% positive transitory shock increases likelihood of borrowing by 3.7 percentage points (31%). Whilst counterintuitive, this is in line with existing empirical literature that finds credit card balance increases are associated with positive employment shocks (Hundtofte et al., 2024). We found that whilst the shock was positive, this impact was driven by individuals losing less income than expected and therefore the fall in income may be the driving factor in requiring additional borrowing. Increasing credit demand is also reflected by increasing credit searches in the 3 months following a transitory negative shock. This supports understanding of the expected consumer response following a transitory income shock to ensure that individuals can appropriately access credit when it is needed.
7. Both permanent and transitory negative income shocks have no statistically significant impact on the probability of credit arrears. However, we do find that a 10% negative permanent income shock increases the self-reported *perceived* likelihood of being in arrears in the next 6 months by 2.25 percentage points, equivalent to a 50% increase. This shows that income shocks can impact expectations about future economic circumstances, even if having limited direct impact at a population level. This has implications for precautionary consumer behaviour that may be suboptimal for meeting their financial objectives, therefore support may be needed for these consumers as part of firms' responsibilities under the Consumer Duty.

Table 1 displays the impact of income shocks on three main consumer outcomes of consumption, new borrowing and the probability of being in arrears. This is a simplified summary of statistically significant empirical results and should be used to understand the general direction of an impact. To understand the magnitude and nuances of the impact please refer to the empirical results section.

Table 1: Summary of income shock impacts

Type of shock	Direction of shock	Consumption	New borrowing	Probability of being in arrears
Transitory	Positive	No impact	**+**	**+**
	Negative	No impact	(+)	No impact
Permanent	Positive	**+**	No impact	No impact
	Negative	**-**	(-)	No impact
Anticipated	Positive	No impact	**-**	No impact
	Negative	No impact	**+**	No impact

(Note: Impacts in brackets are only significant at the 10% level)

Empirical results

The earlier descriptive analysis described how consumption, borrowing and arrears changed during the period covered by our data. In this section, we estimate the causal impact of income shocks and decompose these effects into the permanent and transitory elements of the shock as well as anticipated changes.

Column (4) of Table 2 shows that a 10% permanent income shock leads to a 6.3% change in spending, with the direction of the change in spending the same as the change in shock. The remainder of the shocks is absorbed by changes in savings rate (Table 4). The results in column (3) and (4) also indicates that a 10% transitory income shock has no statistically significant effect on spending. These results are robust to the choice of specification or model used (two-stage least squares in Table 2 or double/debiased machine learning in Table 3). Table 4 highlights that the transitory income shock is mostly smoothed away using savings (coefficient close to 1 of transitory shock on savings), whilst spending levels remain unchanged (coefficient close to 0). A 1% transitory income shock leads to a 0.92 percentage point change in the savings rate (i.e. the proportion of income saved) in the same direction.

We analysed the components of spending that were most impacted by permanent income shocks. Discretionary spending was more responsive to changes in income than non-discretionary spending, with changes of 12% and 4.7% respectively from a 10% shock. Food spending changed by 6.3% in response to a 10% permanent income shock.

These findings are broadly consistent with empirical findings from Pistaferri (2001), Attanasio et al. (2020) and with the economic theory; that unconstrained consumers should respond one-for-one with permanent income shocks but not respond to transitory changes. The results also imply that consumers use their savings to smooth away transitory shocks rather than adjust spending. Using spending and consumption as a proxy for welfare we show that permanent shocks are more costly whereas transitory shocks tend not to be. However, our findings have implications for those unable to use savings to smooth consumption. When experiencing a transitory income shock, these individuals may have to reduce spending, turn to credit or use other forms of borrowing.

These findings are important to the FCA as it demonstrates that the consumer response to an income shock depends heavily on whether it was anticipated and how permanent the shock is perceived to be. This improves our understanding about which shocks have greater welfare costs and what an appropriate model of support would be for consumers. They also indicate a continued focus on supporting consumers to have financial resilience through savings can minimise consumer welfare loss when experiencing an income shock. Having a greater understanding of the circumstances that lead to changes in consumption will also support the FCA in scenario analysis during future macroeconomic shocks.

Table 2: How does (total) spending respond to changes in income? (Two-Stage Least Squares)

	Log of total family spend per month			
	(1)	(2)	(3)	(4)
Total change	0.521***			
	(0.058)			
Total shock		0.656***		
		(0.063)		
Permanent shock			0.649***	0.633***
			(0.060)	(0.073)
Transitory shock			0.095	0.140
			(0.090)	(0.132)
Anticipated change		0.283***		0.056
		(0.092)		(0.124)
Other income change				0.172*
				(0.094)
Num. obs.	6275	6086	6003	5307
N Clusters	2925	2854	2842	2653

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

Table 3: How does (total) spending respond to changes in income? (Double/Debiased ML)

	Log of total family spend per month	
	(3)	(4)
Permanent shock	0.807***	0.636**
	(0.091)	(0.205)
Transitory shock	0.061	0.189
	(0.143)	(0.489)
Anticipated change		-0.070
		(0.556)
Other income change		0.420
		(0.250)
Num. obs.	5937	5255
N Clusters	2804	2623

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

Table 4: Do consumers smooth away transitory shocks? (2SLS)

	Log of family spend per month	Family savings rate
Permanent shock	0.633***	0.431***
	(0.073)	(0.073)
Transitory shock	0.140	0.924***
	(0.132)	(0.132)
Anticipated change	0.056	1.009***
	(0.124)	(0.124)
Other income change	0.172*	0.292**
	(0.094)	(0.094)
Num. obs.	5307	5307
N Clusters	2653	2653

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

It is important for the FCA to understand the expected impact of income shocks on the demand for new credit products. This helps to understand retail consumers' financial objectives and understand whether these are supported in the market, a key cross-cutting rule of the Consumer Duty.

Analysing the impact of income shocks on credit searches and applications, we find that a 10% permanent positive income shock leads to a 3.5 percentage point decrease in credit searches in the subsequent quarter and a 2.4 percentage point reduction in applications in the quarter before. There is also a significant reduction in credit searches and applications following a permanent negative shock. Part of this effect could be due to permanent negative shocks being experienced most intensely in May 2020, the same period that Covid-19 lockdown restrictions were in place and therefore consumption may have been influenced downwards. Looking at transitory shocks, a 10% transitory negative income shock leads to a 10.2 percentage point increase in credit searches over the subsequent quarter. An increase in credit applications over the subsequent quarter was also found, however this effect is not significant.

These effects show that demand for new credit is expected to decrease when negative income shocks are perceived to be permanent but increase if they are transitory. Possible reasons could be due to reduced ability to repay borrowing or that consumers cut back on spending following a permanent shock, as shown in the previous section. For transitory shocks, this could be evidence of individuals turning to credit to smooth consumption. Demand for credit may also have been influenced by restrictions on consumption during Covid-19 lockdown periods.

Table 5: Credit searches and applications

	Soft credit search in 3 months before	Soft credit search in next 3 months	Credit application in 3 months before	Credit application in next 3 months
Permanent positive shock	0.001	-0.345**	-0.241**	-0.067
	(0.137)	(0.161)	(0.109)	(0.116)
Permanent negative shock[1]	0.353***	0.472***	0.118	0.354***
	(0.121)	(0.161)	(0.117)	(0.126)
Transitory positive shock	-0.049	-0.260	-0.229	-0.063
	(0.280)	(0.327)	(0.234)	(0.233)
Transitory negative shock[1]	0.179	-1.018***	0.043	-0.319
	(0.326)	(0.366)	(0.265)	(0.260)
Anticipated change	0.157	-0.262	-0.238*	-0.216
	(0.188)	(0.206)	(0.142)	(0.161)
Other income change	-0.018	0.097	0.075	-0.017
	(0.092)	(0.096)	(0.080)	(0.077)
Num. obs.	3414	3414	3414	3414
N Clusters	1680	1680	1680	1680

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

[1] For negative shocks, the interpretation on the coefficient is reversed. A positive coefficient with a negative shock, leads to a negative impact on the outcome variable (E.g. Permanent negative shock and soft credit searches). A negative coefficient with a negative shock leads to a positive impact on the outcome variable (E.g. Transitory negative shock and soft credit search in next 3 months).

Do these impacts on searches and applications track through to borrowing (and payment holidays)? Broadly speaking, the answer is yes. A 10% permanent shock leads to a fall in the likelihood of having a payment holiday on any credit product by 0.96 percentage points for a positive shock but an increase of 0.78 percentage points for a negative shock (the shock is negative, and the coefficient is negative, so the overall impact is positive). However, neither of these effects are statistically significant. Permanent negative shocks do not lead to increased likelihood of borrowing, which is in line with the findings from Hundtofte et al.

Regarding transitory shocks, the probability of borrowing increases regardless of the direction of the shock. Counterintuitively, a 10% positive shock increases the probability of new borrowing by 3.7 percentage points, while a 10% transitory negative shock increases likelihood of borrowing by 3.9 percentage points, however this effect is not statistically significant. These can potentially be explained by using credit for consumption smoothing in times of a negative income shock and taking advantage of unexpectedly better circumstances when experiencing a positive shock by looking to borrow more. This result was driven by individuals that experienced income decreases and positive shocks i.e. they lost less income than they expected to lose. This points to a potential explanation that the loss of income led to increased borrowing, even though their circumstances were better than expected.

Anticipated income increases reduce the likelihood of borrowing and the likelihood of taking a payment holiday (not statistically significant). This intuitively makes sense as expected improvements in circumstance reduce reliance on credit and increase the ability to repay outstanding credit balances.

Table 6: Borrowing and payment holidays

	Has new borrowing	Has current payment holiday	Has new borrowing in next 3 months	Probability of new borrowing	Probability of borrowing from family/ friends
Permanent positive shock	-0.101	-0.096	-0.055	-0.067	0.020
	(0.108)	(0.063)	(0.133)	(0.042)	(0.043)
Permanent negative shock[1]	0.180*	-0.078	-0.110	0.026	-0.148
	(0.103)	(0.055)	(0.088)	(0.092)	(0.096)
Transitory positive shock	0.373**	0.047	0.028	0.274**	0.353***
	(0.188)	(0.087)	(0.169)	(0.109)	(0.117)
Transitory negative shock[1]	-0.392*	-0.099	0.077	-0.021	-0.021
	(0.201)	(0.122)	(0.187)	(0.070)	(0.079)
Anticipated change	-0.391***	-0.126*	0.001	-0.078	-0.034
	(0.126)	(0.064)	(0.146)	(0.050)	(0.055)
Other income change	0.018	-0.083	0.016	-0.051	-0.010
	(0.076)	(0.047)	(0.065)	(0.043)	(0.041)
Num. obs.	5310	2929	3327	4360	4360
N Clusters	2654	1730	1916	2523	2523

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

[1] For negative shocks, the interpretation on the coefficient is reversed. A positive coefficient with a negative shock, leads to a negative impact on the outcome variable. A negative coefficient with a negative shock leads to a positive impact on the outcome variable.

It is more difficult to find statistically significant relationships for credit arrears given they are rarer events in the data. Permanent income shocks did not have a statistically significant impact on the likelihood of being in arrears, however the signs on the coefficients show that positive shocks mostly led to lower arrears probability and negative shocks led to higher arrears probability in the next 3 months (Table 7). The finding that permanent negative income shocks have a limited impact on borrowing and arrears may demonstrate that consumers adjust their consumption to smooth their debt balances rather than taking on more debt or going into arrears. This finding is consistent with Baxton et al. who find limited impact of job losses on credit limits and credit scores. It is also validated by recent FCA analysis (2024) that found no significant increase in the use of unsecured credit after leaving full time employment. One possible explanation is that many the permanent negative income shocks occurred in May 2020 (shown in Figure 10). This period was the onset of the Covid-19 pandemic which included restrictions on consumption in periods of lockdown. This could lead to a limited impact from permanent income shocks on arrears because consumers' outgoings also decreased substantially.

Whilst having limited impact on the probability of being in arrears, Table 7 shows that a 10% permanent negative income shock increases the perceived likelihood of being in arrears in the next 6 months by 2.25 percentage points, equivalent to a 50% increase. This finding shows that income shocks can impact expectations about future circumstances. Alongside the descriptive statistics, our findings indicate that after

experiencing economic shocks and wider macroeconomic uncertainty, consumer expectations can be gloomy. This may be a natural cautiousness given the economic circumstances and may lead to cautious spending, saving and borrowing behaviour.

Transitory shocks increase the likelihood of being in arrears, with a positive shock leading to a statistically significant increase. A 10% transitory positive shock increases the likelihood of being in arrears in the current quarter by a significant 3.3 percentage points. This is a counterintuitive finding but does have some possible plausible explanations and is consistent with findings in the literature (Hundtofte et al., 2024). They find that credit card balance increases are associated with positive employment shocks and conclude that individuals don't primarily use credit for consumption smoothing. We find that this relationship is driven by individuals that experience a fall in income of less than expected (therefore a positive shock). Whilst their situation is better than expected, the fall in income still increases the likelihood of falling into arrears which is intuitive. Alternatively, a positive transitory shock may imply things will get worse in the future. This could lead to individuals deciding not to pay down credit balances as they need to keep the income for future consumption or making capital purchases with unexpectedly higher income which lead to more borrowing and arrears. Comparing the impact of transitory and permanent positive shocks, whilst not all effects are significant, the signs of the coefficients are opposed. This implies that permanent and transitory shocks lead to different consumer behaviour.

Table 7: Arrears

	In any arrears	In any arrears in next 3 months	Any 30 day arrears in previous 3 months	Any 30 day arrears in next 3 months	Probability of arrears in next 6 months, self-reported
Permanent positive shock	0.061	-0.068	-0.314	-0.322	0.064
	(0.047)	(0.063)	(0.228)	(0.224)	(0.044)
Permanent negative shock[1]	0.038	-0.014	0.275	0.287	-0.225**
	(0.102)	(0.044)	(0.441)	(0.439)	(0.096)
Transitory positive shock	0.332***	0.185*	1.465	1.434	0.177
	(0.124)	(0.106)	(1.250)	(1.246)	(0.110)
Transitory negative shock[1]	0.009	-0.086	-0.345	-0.530	0.041
	(0.078)	(0.085)	(0.980)	(0.986)	(0.077)
Anticipated change	-0.025	-0.021	-0.176	-0.104	-0.086*
	(0.051)	(0.079)	(0.560)	(0.511)	(0.045)
Other income change	-0.057	-0.020	-0.391	-0.348	-0.059
	(0.044)	(0.035)	(0.312)	(0.296)	(0.043)
Num. obs.	4314	3318	3008	3008	4330
N Clusters	2499	1912	1483	1483	2510

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

[1] For negative shocks, the interpretation on the coefficient is reversed. A positive coefficient with a negative shock, leads to a negative impact on the outcome variable. A negative coefficient with a negative shock leads to a positive impact on the outcome variable.

6 Conclusion and discussion

Limitations

The findings in this research note have several limitations.

One consideration is that the unique nature of the Covid-19 pandemic makes it hard to draw general conclusions that apply to other time periods. There is no doubt that generalisability is a concern; for example, the furlough scheme and the availability of payment holidays were unique policy responses that may impact our results. Additionally, restrictions on consumption (e.g. closing of hospitality and travel restrictions) may impact our findings. All studies are specific to a given context (time period, group of individuals, stage in the economic cycle etc) so this is always an issue to some degree, but the pandemic period is more unusual than any other period in recent history.

Additionally, consumers were more likely to have experienced permanent income shocks in May 2020, at the initial onset of the Covid-19 pandemic (see Figure 9 and Figure 10). Due to the lockdown restrictions in place at the time and the limits on some forms of consumption (e.g. foreign travel, hospitality), it is difficult to generalise the effects of an income shock during this time to other periods. Whilst we can't be sure, this may have influenced the consumption, borrowing and arrears impacts downwards for permanent negative income shocks.

In response, it is worth noting three things. Our estimates are not biased by the pandemic in the sense of partly capturing the effect of the pandemic on spending. Because everyone went through the pandemic, our regressions compare individuals who went through the pandemic and whose income was affected with individuals who went through the pandemic but whose income was not (or was less) affected. Nevertheless, it is possible that the way individuals responded to shocks was affected by the pandemic environment (e.g. perhaps spending responded differently because some types of spending were restricted at certain points).

Second, our results show that, even in extreme periods, there is a good degree of agreement between the behaviour we observe in the data and what the relevant theory would have predicted would happen. Given this is the case, it seems reasonable to think that qualitative results and broad magnitudes can, at least tentatively, be translated to other periods. This is bolstered by the fact that our data cover periods with varying degrees of restriction (so results are not simply due to behaviour during lockdowns) and work covering longer time periods and/or periods outside Covid (including FCA, 2024) also tend to draw some consistent findings.

Third, even if the quantitative results don't transfer, we are confident that our conclusion about needing to distinguish between different types of income changes consumers' experience is relevant in other periods. This is the foundation for several of our main policy conclusions, such as the importance of firms to consider the drivers and likely

persistence of income changes experienced by customers in deciding what support to provide.

Aside from issues relating to generalisability, it is important to recognise that our results are averages across the population and therefore may not reflect the specific experiences of particular groups. As described in the descriptive analysis, outcomes for these groups differ substantially around the time of the Covid-19 pandemic so the analysis would have benefitted from being able to distinguish between different sub-groups. Unfortunately, however, sample sizes are too small and our instruments insufficiently powerful for us to be able to do much sub-group analysis. This means we may be missing some substantial impacts that only apply to parts of the population e.g. those with no savings. For that reason, quantitative estimates should be used with caution and not necessarily applied without consideration of the groups involved. Nevertheless, the high-level interpretation of the findings remains valid.

Another limitation is driven by divergence in the impacts of negative and positive shocks. In some instances we have grouped income shocks together in our regressions. This gives us the average directional relationship between a shock and an outcome variable e.g. consumption. However, it could be that this relationship is driven more by a negative shock or a positive shock. Where we reference different magnitudes of coefficient for each direction of shock, we have analysed these shocks separately to determine whether the relationships diverge. Where we use a single coefficient for both directions of shock this is the combined result of both negative and positive shocks.

We use instrumental variables to control for endogeneity caused by measurement error in our regressions but rely on more instruments than ideal because the instruments available are not as strong as we would like (i.e. there is a weak statistical relationship between the instruments and the income shock). We have attempted to assess the impact of this issue by conducting sensitivity analysis based on a sample-splitting approach, which confirms that the direction and broad magnitudes of coefficients is stable.

Finally, our analysis only covers income shocks as a channel for consumer harm. We know that during this period people encountered shocks to expenditure such as high inflation, increasing energy bills and rising housing costs due to higher interest rates. These shocks aren’t considered in our analysis but are contributing factors in determining the overall financial outcomes of consumers. Potential avenues for future analysis may look to analyse disposable income shocks rather than gross income shocks.

Implications for policy

These findings enable the FCA to better understand the impact of income shocks when delivering our objective of protecting consumers.

The key finding of our research is that when consumers experience an income change, the outcomes for consumers (spending, saving, borrowing and arrears) depend crucially on what sort of income change it is. Our findings confirm that permanent income shocks are significant in their impact on consumer welfare (proxied by spending), whereas transitory shocks have no significant impact. This finding highlights the importance of distinguishing between the type of shocks consumers face to ensure that support is

targeted and appropriate to the difficulties faced by consumers. Understanding the type of shock experienced could be achieved by firms' making direct contact with consumers or using open banking data to proactively identify where income shocks appear to be more permanent. This could lead to earlier detection of consumer vulnerability and a potential avoidance of consumer harms. This has direct implications for firms to fulfil their commitments under the Consumer Duty to identify and understand the needs of vulnerable consumers. Firms will also be aware that during the Covid-19 pandemic, we introduced our Tailored Support Guidance for Consumer Credit, Mortgages and Overdrafts, which explained how firms could support customers in financial difficulty. We have since built on this to provide a stronger framework for firms to protect customers facing payment difficulties, by incorporating relevant aspects into our Handbook.

On average, consumers were resilient to negative income shocks. The findings show that consumers took appropriate financial decisions and made efficient use of credit when experiencing income shocks. Permanent negative shocks led to consumers cutting back consumption, whereas transitory negative income shock led to increased borrowing, but without increasing the probability of arrears. This demonstrates appropriate usage of credit by consumers and responsible lending from firms, which highlights the important positive role of credit when consumers face unexpected changes in circumstance. It is important to note that this finding represents the average response from our analysis. Certain sub-groups (i.e. those without savings) may have been less resilient to income shocks. These groups will be focus of future analysis looking at vulnerable consumers.

The impact on demand for credit is dependent on whether a shock is considered transitory or permanent. Transitory negative income shocks increase credit searches and the probability of new borrowing, whereas permanent negative shocks reduce credit searches and the probability of new borrowing. These findings highlight the importance of credit and suggest that consumers are likely to interact with financial services firms following income shocks. As part of the Consumer Duty, it is important that individuals are supported by lenders to achieve their financial objectives and this analysis identifies circumstances that may lead to increased need for credit or potential repayment support. A detailed understanding of circumstances is critical to determining the appropriate support.

However, it is not just the availability of support that matters; how this is made available and delivered is important too. Insights from behavioural science show that both the process and the communication approach of a 'customer journey' for support can impact consumers' willingness to engage and follow through with it. For example, how easily signposted support is (Behavioural Insights Team, 2018), and the number of steps it takes to engage (Money Advice Service, 2017) can impact engagement. Other research has found that communications perceived as unsympathetic (including threats of punishment) or using negatively associated words (such as 'debt') can affect perceptions and deter consumers from engaging (Collard, 2013, Money Advice Service, 2017). These issues are often exacerbated for customers with additional vulnerabilities, such as those with mental health conditions (Collard, 2013), which further highlights the importance for firms to consider the needs and specific circumstances of different consumers.

The finding that consumers "help themselves", by using savings to smooth consumption when they experience a transitory income shock, is an important validation of a core principle underpinning FCA consumer legislation; that consumers take responsibility for

their financial decisions (2024). Our finding demonstrates that consumers use savings to limit the impact of an income shock on their consumption. Our analysis was unable to look at specific circumstances where consumers don't have savings, and how these individuals deal with the unexpected change in income. These individuals may have to make difficult decisions, with options such as cutting spending, using credit or turning to other forms of borrowing. Based on these findings, firms should continue to promote consumer savings as a buffer against future economic shocks and should support consumers with information on how to use savings products effectively.

Some of the more counterintuitive findings such as increases in arrears probability and new borrowing following a transitory positive shock requires further analysis. Whilst the findings are consistent with existing literature, this may indicate that consumers require support or guidance on financial decisions following a positive income shock.

Better understanding consumer responses to an income shock, and having empirical estimates for the impacts, can support the FCA in assessing changes in consumption and any expected macroeconomic or financial stability consequences. The findings indicate the importance of savings for maintaining consumption levels during transitory shocks, which has knock-on effects for macroeconomic stability and growth (consumption makes up ~60% of GDP (2024)). Policies that improve financial literacy and broaden the understanding of the importance of consumer resilience could help the FCA to deliver its secondary objective to support growth.

Finally, it is important to consider these findings in light of other recent FCA analysis on employment shocks and financial difficulty (2024). This analysis found that consumers did not increase indebtedness following a transition out of employment, however individuals that became unemployed due to long-term sickness or disability were much more likely to enter arrears on credit products. This is in line with our findings that the specific nature of a change in consumer circumstances is critical in determining the appropriate response from firms. Whilst assessing different shocks, both analyses are complimentary in deepening understanding of consumer impacts from unexpected changes in life circumstances.

Table 8: Summary of Consumer Duty implications

Finding	Consumer Duty implication
When consumers experience an income change, the outcomes for consumers (spending, saving, borrowing and arrears) depend crucially on what sort of income change it is.	Firms should identify and understand the specific circumstances of a change in income to determine appropriate support. This could be achieved by firms making direct contact with consumers or using open banking data to proactively identify where income shocks appear to be more permanent.
Consumers use savings to limit the impact of an income shock on their consumption.	Firms should continue to promote consumer savings as a buffer against future economic shocks and should support consumers with information on how to use savings products

	effectively with the aim of improving consumer resilience.
Demand for credit increases following both positive and negative transitory income shocks.	Firms should understand the expected duration of an income shock to ensure that individuals can appropriately access credit when it is needed, within the parameters of relevant rules and guidance on creditworthiness and affordability.
Income shocks can impact expectations about future economic circumstances, even if having limited direct impact on arrears.	This may cause precautionary consumer behaviour that may be suboptimal for meeting their financial objectives. Therefore, support may be needed for these consumers as part of firms' responsibilities under the Consumer Duty.

7 References

Arellano, M., Blundell, R., Bonhomme, S., & Light, J. (2023). *Heterogeneity of consumption responses to income shocks in the presence of nonlinear persistence*. CEMMAP, Working Paper CWP07/23. https://www.cemmap.ac.uk/wp-content/uploads/2023/04/CWP0723-Heterogeneity-of-consumption-responses-to-income-shocks-in-the-presence-of-nonlinear-persistence.pdf

Attanasio, O., Kovacs, A., & Molnar, K. (2019). *Euler Equations, Subjective Expectations and Income Shocks*. Economica, 87(346), 406-441. https://onlinelibrary.wiley.com/doi/abs/10.1111/ecca.12318

Baker, S. R. (2015). *Debt and the Consumption Response to Household Income Shocks*. SSRN. https://ssrn.com/abstract=2541142

Behavioural Insights Team (2018). *A behavioural approach to managing money: Ideas and results from the Financial Capability Lab*. https://www.bi.team/wp-content/uploads/2018/05/Financial-Capability-Lab-Report-May18.pdf

Blundell, R., Pistaferri, L., & and Preston, I. (2008). *Consumption Inequality and Partial Insurance*. Annual Economic Review, 98(5), 1887-1921. https://www.ucl.ac.uk/~uctp39a/BBP%20AER.pdf

Braxton, J. C., Herkenhoff, K. F., & Phillips, G. M. (2020). *Can the Unemployed Borrow? Implications for Public Insurance*. National Bureau of Economic Research, Working Paper 27026. https://www.nber.org/papers/w27026

Collard, S. (2013). *Working Together: Understanding Motivations And Barriers To Engagement In The Consumer Debt Marketplace*. https://www.bristol.ac.uk/media-library/sites/geography/migrated/documents/pfrc1319.pdf

Crawley, E & Theloudis, A. (2024). *Income Shocks and their Transmission into Consumption*. arXiv, 2404.12214. https://arxiv.org/abs/2404.12214

Deaton, A. & Muellbauer, J. (1980). *Economics and consumer behavior*. Cambridge University Press. https://www.cambridge.org/core/books/economics-and-consumer-behavior/75DEDED955947555732A39E38D87D0EA

Financial Conduct Authority (2020). *Financial Lives 2020 survey: the impact of coronavirus. Key findings from the FCA's Financial Lives 2020 survey and October 2020 Covid-19 panel survey*. https://www.fca.org.uk/publication/research/financial-lives-survey-2020.pdf

Financial Conduct Authority (2022). *A new Consumer Duty: Feedback to CP21/36 and final rules*. Policy Statement 22/9. https://www.fca.org.uk/publication/policy/ps22-9.pdf

Financial Conduct Authority (2024, March 19). *Our approach to consumers*. https://www.fca.org.uk/publications/corporate-documents/our-approach-consumers

Franklin, J., Green, G., Rice-Jones, L., Venables, S., & Wukovits-Votzi, T. (2021). *Household debt and Covid*. Quarterly Bulletin, 2021 Q2. https://www.bankofengland.co.uk/quarterly-bulletin/2021/2021-q2/household-debt-and-covid

Friedman, M. (1957). *The Permanent Income Hypothesis*. In *A Theory of Consumption Function*. Princeton University Press. https://www.nber.org/system/files/chapters/c4405/c4405.pdf

Gul, F. & Pesendorfer, W. (2003). *Temptation and Self-Control*. Econometrica, 69(6), 1403-1435. https://onlinelibrary.wiley.com/doi/abs/10.1111/1468-0262.00252

HM Revenue & Customs (2021). *Coronavirus Job Retention Scheme statistics*. https://www.gov.uk/government/statistics/coronavirus-job-retention-scheme-statistics-16-december-2021/coronavirus-job-retention-scheme-statistics-16-december-2021

House of Commons Library (2024). *Components of GDP: Key Economic Indicators*. Research Briefing. https://commonslibrary.parliament.uk/research-briefings/sn02787/#:~:text=GDP%20by%20Expenditure,compared%20with%20the%20previous%20quarter.

Hundtofte, S., Olafsson, A., & Pagel, M. (2019). *Credit Smoothing*. National Bureau of Economic Research, Working Paper 26354. https://www.nber.org/papers/w26354

Jappelli, T. & Pistaferri, L. (2010). *The Consumption Response to Income Changes*. The Annual Review of Economics, 2010(2), 479-506. https://web.stanford.edu/~pista/ann_rev.pdf

Jappelli, T. & Pistaferri, L.(2018). *The Economics of Consumption: Theory and Evidence*. Oxford University Press. https://global.oup.com/academic/product/the-economics-of-consumption-9780199383153?cc=gb&lang=en&#

Keys, B. J., Tobacman, J., & Wang, J. (2018). *Rainy Day Credit? Unsecured Credit and Local Employment Shocks*. Working Paper. https://www.law.upenn.edu/live/files/9008-rainy-day-credit-unsecured-credit-and-local

Laibson, D. (1997). *Golden Eggs and Hyperbolic Discounting*. The Quarterly Journal of Economics, 112(2), 443-447. https://www.jstor.org/stable/2951242

Leslie, J. & Shah, K. (2021) *(Wealth) gap year. The impact of the coronavirus crisis on UK household wealth*. Resolution Foundation. https://www.resolutionfoundation.org/app/uploads/2021/07/Wealth-gap-year.pdf

Money Advice Service (2017). *How to use behavioural science to increase the uptake of debt advice*. https://asauk.org.uk/wp-content/uploads/2018/03/MAS0032-MAS-BehaviouralChange_W.pdf

Pistaferri, L. (2001). *Superior information, income shocks, and the permanent income hypothesis*. The Review of Economics and Statistics, 83(3), 465-476. https://web.stanford.edu/~pista/restat.pdf

Step Change (2023). *Navigating the New Normal: Why working families fall into problem debt and how we need to respond*. https://www.stepchange.org/policy-and-research/the-new-normal.aspx