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Purse Strings Versus Heart Strings: Do emotions Affect Economic Behavior?

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Purse Strings *Versus* Heart Strings: Do Emotions Affect Economic Behavior?*

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Abstract

Do emotions affect economic behavior? We identify two transmission channels of negative emotions to consumption, one predicted by economists and one predicted by psychologists. We use self-reported financial stress and mental distress to identify negative emotions and use current and expected spending to capture consumption behavior. We find that the psychology transmission channel dominates when budget constraints are not binding. As a coping mechanism, consumers increase consumption to regulate the negative emotions caused by stress. Our results are in line with appraisal models of emotions where the perceived cause of the emotion rather than its pleasantness drives behavior.

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1. Introduction

Emotions impact people's decisions. 'Many psychological scientists now assume that emotions are [...] the dominant driver of most meaningful decisions in life'; see [Lerner et al. \(2015\)](#). We identify two transmission channels of negative emotions to consumption, an economic channel and a psychology channel. We find that the psychology channel can dominate when the two channels operate in opposite directions, a new result for economics and psychology. In addition, we find that the antecedent appraisals (perceived causes) of the negative emotions matter for consumption behaviour rather than their valence (pleasantness). This is in line with appraisal models of emotions in psychology.

We use self-reported current and expected spending to capture consumption decisions and use self-reported financial stress¹ and mental distress to identify negative emotions. The data are unit records from two population-level consumer surveys. Financial stress refers to the inability to pay for essential goods and services such as bills, rents and mortgages. Mental distress is the frequency that consumers feel depressed or anxious during the past week. The inability to pay for essential goods and services may provoke negative emotions in some consumers but not all. Therefore, we use mental distress as an instrument to identify the causal influence of negative emotions on spending.²

The financially and mentally stressed consumers are the key treatment group in our study because their spending decisions are explicitly influenced by both, an economic factor (financial worries) and a psychological factor (mental worries), but in opposite directions. Economists predict a decline in spending for this group to alleviate the finan-

¹Alternative terms for financial stress are: financial scarcity, financial strain, financial satisfaction and perceived income adequacy; see [Brzozowski and Spotton Visano \(2020\)](#).

²There is a potential causality from financial stress to mental distress. While we are unable to verify this with our data, it does not affect our identification scheme.

cial stress. Psychologists predict a rise in spending because the positive emotions from consumption alleviate negative emotions from the stress.

Higher current spending can lead to financial stress. This endogeneity between financial stress and spending does not apply to expected spending. To identify further the causal impact of stress on consumption, we utilize that each transmission channel predicts a different profile of current and expected spending for financially and mentally stressed consumers. Specifically, for these double stressed consumers, economists predict that a rise in current spending (a possible cause of the financial stress) which is followed by a decline in future spending. Mental distress has no impact. In contrast, psychologists predict that a rise in current spending is followed by another rise in future spending. Consumers use the positive emotions from future spending to offset the negative emotions that arise from the stress.³ This need to regulate negative emotions can dominate financial concerns.

We employ three sets of cross-section ordered logit regressions. The first set investigates the two transmission channels by regressing expected spending on current spending and a set of controls, for four different consumer groups: only financially stressed; only mentally stressed; financially and mentally stressed; and not stressed. The first three are treatment groups while the last one is the control group in our study. We find that a rise in current spending significantly and strongly predicts a rise in future spending for stressed consumers, particularly the financially and mentally stressed. This finding confirms the prediction from psychology and reveals that the psychology channel can dominate.

The second set of cross-section ordered logit regressions investigates how stress induced negative emotions affect consumption. We regress current and expected spending on financial stress, mental distress, an interaction term between financial stress and mental

³The current utility from expected spending is in line with ‘optimal expectations’ in [Brunnermeier and Parker \(2005\)](#).

distress, and a suite of macroeconomic and respondent specific demographic controls including sentiment. For current spending, the coefficients on all three stress terms are statistically significant. Given the endogeneity between current spending and financial stress, only the significant coefficient on mental distress indicates a causal effect of stress on current consumption. For future spending, the coefficient on financial stress is statistically insignificant and small, giving some support for the prediction from economics. The coefficients on mental stress and the stress interaction term are statistically significant and indicate that stress leads to higher expected spending. Instead of reducing future spending to lessen the financial stress, the financially and mentally stressed expect to spend more, again demonstrating that the need to offset the negative emotions from the stress can outweigh the financial consequences.

To explore the impact of binding budget constraints on spending decisions, we estimate a third set of cross-section regressions for three consumer groups. The groups refer to self-reported current family finances in the past twelve months. Respondents nominate: ‘worse-off’, ‘same’ and ‘better-off’. For the ‘worse-off’ group, those most likely to face binding budget constraints, stress has no effect on current or expected spending. Results for the other two groups are in line with those above, revealing that budget constraints can limit the psychology transmission channel.⁴

The dominance of the psychology channel is, perhaps, puzzling for economists. The poor decision of spending more while financially stressed, may be less puzzling from a neurological point of view. Emotions affect cognitive processes including perceptions, memory and reasoning; see [Tyng et al. \(2017\)](#). Positive and negative emotions affect logical reasoning and there is evidence that if the content of the problems has an emotional

⁴The results are also a cross-check on the sensibleness of responses.

link, logical reasoning is worse; see [Jung et al. \(2014\)](#). This means financially stressed individuals, particularly those also experiencing mental distress, may have greater difficulties making sound financial decisions than individuals who are not financially stressed.⁵ Stress also has neurological implications. The prefrontal cortex (PFC) is the most evolved region of the brain and is instrumental to highest-order cognitive abilities. It monitors errors so that harmful behaviour can be corrected ([Arnsten, 2009](#)). The PFC is also most sensitive to the detrimental effects of stress ([Arnsten, 2009](#)) which renders our findings of poor financial decisions less perplexing. If negative emotions in general and stress in particular affect reasoning, it is perhaps not surprising that financially and mentally stressed consumers make poor financial decisions.

The presence and impact of emotions has been documented in the consumer sentiment literature that dates back to at least the animal spirits in [Keynes \(1935\)](#). Sentiment, constructed from consumer expectations surveys, can contain autonomous components. These autonomous components are unrelated to economic fundamentals but can impact consumption decisions. They can be identified as emotional responses to exogenous events, such as mass shootings ([Lagerborg et al., 2022](#)), election outcomes ([Benhabib and Spiegel, 2018](#); [Gillitzer and Prasad, 2018](#); [Claus and Nguyen, 2018](#); [Kamdar and Ray, 2023](#)) or housing experiences of friends ([Makridis, 2022](#)). In this literature, negative emotions or pessimism (positive emotions or optimism)⁶ put downward (upward) pressure on consumption. We control for consumer sentiment in our estimations with analogous results.

The upward pressure of stress on consumption is in contrast to the downward pressure of pessimism on consumption. Surprisingly, two emotions with negative valence (unpleas-

⁵In [Jung et al. \(2014\)](#), individuals with arachnophobia demonstrate worse logical reasoning for problems with spider content than without.

⁶‘Optimism’ and ‘pessimism’ are standard terms in this literature. We define their meaning below.

antness) have opposite effects on consumption. These findings are in line with appraisal models of emotions ([Keltner et al., 1993](#)) where the (perceived) causes of particular emotions rather than their valence affect subsequent judgements and behaviour.

The rest of the paper is organized as follows. Section 2 provides a brief review of the literature on stress and how we measure stress. Section 3 describes the data and provides some descriptive statistics. Section 4 presents our empirical frameworks and results while Section 5 provides some concluding remarks. Survey questions, additional results and robustness exercises are in the Appendixes.

2. What is Stress?

‘Stress refers to a psychological state in which one experiences harm, a threat, or a challenge to their current resources and capacity’; see [Li et al. \(2019\)](#) and [Lazarus \(1993\)](#). Acute stress is in response to discrete challenging events, such as an exam or a presentation, while chronic stress is a state of persistent distress from continuously stressful situations; see [Li et al. \(2019\)](#). Stress impacts a person’s physical and emotional well-being. Stress causes anxiety, worry or feelings of not coping ([French and Vigne, 2019](#)) and can increase the risk for cardiovascular disease ([Starcke and Brand, 2012](#)).

We borrow from the psychology literature to identify stress; see [Monroe \(2008\)](#) for a review of measuring stress. We use a stimulus-based definition to identify financial stress and a response-based equivalent to identify mental distress. In the stimulus-based approach, particular events are assumed to be stressful and cause an emotional response. Here, we assume that the self-reported inability to pay for essential goods and services such as bills, rents and mortgages is such a stressor that causes an emotional response;

Magwegwe et al. (2020).⁷ The response-based approach utilizes the emotional response to measure stress. Here, this emotional response is the self-reported frequency that consumers feel depressed or anxious during the past week. Consumers who are mentally stressed because of their financial stress are in the group reporting both financial and mental stress, the group with the largest incidence of increased spending in our study.

Tice et al. (2001) find that, ‘when people are upset, they indulge immediate impulses to make themselves feel better’. Kemp and Kopp (2011) introduce the term emotions regulating consumption (ERC) where individuals purchase non-necessary goods and services for the purpose of alleviating, repairing or managing emotions, sadness, amusement, contentment and fear/anxiety. Unlike moods, emotions are more intense and have an antecedent or cause; Kemp and Kopp (2011). In a series of experiments, the authors show that individuals may consume hedonic products in an effort to invoke positive emotions to mitigate the effects of negative emotions. Durante and Laran (2016) find that stressed consumers display two distinctive coping strategies. Some spend more mainly on necessities while others save more, both with an aim to gain control of their environment.

3. Consumer Surveys and Descriptive Statistics

We employ a combination of unit record data from two population-level surveys of Australian consumers, the Consumer Attitudes, Sentiments and Expectations (CAsiE) survey and the Taking the Pulse of the Nation (TTPN) survey. Both are hosted at the University of Melbourne. CAsiE is a long-standing monthly survey modeled on the University of Michigan’s Survey of Consumers and empirical results for Australia closely align with

⁷While we cannot explicitly verify the validity of this assumption with our dataset, our empirical findings provide support for this assumption.

those for the US; see [Claus and Nguyen \(2018, 2020, 2023\)](#). The survey's primary purpose is to monitor consumer sentiment and economic expectations which are important determinants of consumer spending ([Carroll et al., 1994](#); [Gillitzer and Prasad, 2018](#); [Claus and Nguyen, 2023](#)). TTPN is a weekly survey starting in April 2020 to provide timely insights into various social and economic issues for policy analysis during the COVID-19 pandemic, including financial stress, mental distress and consumer spending behaviour. The combination of the two surveys offers a unique opportunity to investigate the impact of negative emotions on consumer consumption behaviour.

Both CASiE and TTPN are pure repeated cross-sections and are stratified by gender, age and location so they are representative of the Australian population. Whenever their survey periods overlapped, they were conducted on the same panel of 1,200 Australian consumers.⁸ These overlapping waves of CASiE and TTPN provide a unique unit-record dataset to study the influence of emotions on consumer economic behaviour. The sections below describe the questions in each survey that are used for our analysis. The detailed survey questions are in Appendix A and Table B1 in Appendix B provides information about the selected waves when CASiE and TTPN overlapped and about the questions from each survey.

3.1. Consumer Attitudes, Sentiments and Expectations (CASiE)

CASiE⁹ has been widely used for monitoring tasks at public and private institutions and for research.¹⁰ The survey captures consumer economic expectations and sentiment which

⁸The University of Michigan Survey of US Consumers consists of around 500 respondents per month.

⁹For more information, see [Leahy and Summers \(2004\)](#).

¹⁰See, for example, [Botha and Nguyen \(2022\)](#); [Claus and Nguyen \(2018, 2020, 2023\)](#); [Gillitzer and Prasad \(2018\)](#); [Gillitzer et al. \(2021\)](#).

carry information about both fundamentals (Carroll et al., 1994; Barsky and Sims, 2012) and non-fundamentals (Benhabib and Spiegel, 2018; Gillitzer and Prasad, 2018; Lagerborg et al., 2022; Claus and Nguyen, 2023). We include sentiment as a control variable and, importantly, to juxtapose emotions from stress to emotions caused by sentiment shocks.

We use the five core questions in CASiE that are used to construct the Consumer Sentiment Index (CSI) for Australia. Specifically, consumers are asked about:

- Q1. (*CurrFamFin*) their current family finances compared to 12 months ago,
- Q2. (*ExpFamFin12M*) their expected family finances in the next 12 months,
- Q3. (*ExpEcon12M*) expected economic conditions in the next 12 months,
- Q4. (*ExpEcon5Y*) expected economic conditions in the next five years,
- Q5. (*GoodTime2Buy*) whether it is good/bad time to buy major household items.

The answers are ordinal: better-off/good, same, worse-off/bad or don't know/uncertain. Section 3.1.1 below explains how the usual aggregate CSI is constructed from the responses to the above five questions. Section 3.1.2 describes how we construct individual CSIs to include in our analysis.

3.1.1. Aggregate Consumer Sentiment Index

The responses to the above five questions are used to construct five component indexes, one for each question, following the balance approach: the weighted proportion of optimists (those with better-off/good responses) less the weighted proportion of pessimists (those with worse-off/bad responses) plus 100. The aggregate CSI at time t is constructed

as a simple average of the five component indexes (see Curtin, 2002):

$$CSI_t = \frac{(Q1_t + Q2_t + Q3_t + Q4_t + Q5_t)}{5}. \quad (1)$$

where Q_{i_t} for $i = 1, \dots, 5$ denotes the component index for question i . By construction, Q_{i_t} and CSI_t are bounded between 0 and 200 with 100 being the neutral mark. A value greater (less) than 100 indicates that optimism (pessimism) outweighs pessimism (optimism). A value of 0 indicates that all respondents are pessimistic and a value of 200 indicates that all are optimistic.

3.1.2. Constructing Individual Consumer Sentiment Indexes

To capture the effect of individual consumers' sentiment on their spending behaviour, we construct individual CSIs. We use the scoring scheme employed by the University of Michigan, to convert consumers' ordinal responses to the five core CASiE questions into numerical scores, to calculate an index of consumer sentiment for each respondent¹¹

The sentiment index of respondent i , at time t can be computed as follows:

$$CSI_{i,t} = \left(\frac{\sum_{j=1}^5 R_{i,t}^j}{n_{i,t}} \right), \quad \text{for } n_{i,t} \neq 0; \quad i = 1, \dots, N; \quad t = 1, \dots, T; \quad (2)$$

where $R_{i,t}^j$ is the numerical response of respondent i to question j for $j = 1, \dots, 5$; $n_{i,t}$ is the number of responses from respondent i at time t that are not 'Don't know' or 'Uncertain'. When $n_{i,t} = 0$ respondent i is removed from the sample. In that case, all responses provided by respondent i are 'Don't know' or 'Uncertain' and hence they are not informative in determining this respondent's sentiment. Similar to the aggregate CSI_t ,

¹¹See Table B2 in Appendix B for more details.

the individual $CSI_{i,t}$ is also bounded between 0 and 200 with 100 being the neutral mark. As our analysis focuses on cross-sectional variation, we drop the time indicator t from $CSI_{i,t}$, and simply use CSI_i to indicate the sentiment reading for consumer i .

3.2. Taking the Pulse of the Nation (TTPN)

TTPN aims to provide timely insights and evidence for policy discussion during the COVID-19 pandemic.¹² It has provided useful information to analyse the impacts of the COVID-19 pandemic on Australian social and economic issues ([Melbourne Institute of Applied Economic and Social Research, 2021](#)) and for research ([Botha et al., 2021](#); [Botha et al., 2022](#)). For our analysis, we select two sets of TTPN questions.

3.2.1. Financial Stress and Mental Distress Questions

The first set of selected TTPN questions is to measure the level of financial stress and mental distress among consumers. Specifically, consumers are asked about:

Q6. (*FinStress*) their current financial conditions in terms of paying for essential goods and services such as bills, rents, mortgages,

Q7. (*MentalStress*) how often they felt depressed or anxious during the past week.

The available responses to *FinStress* are ‘very financially stressed’, ‘moderately financially stressed’, ‘making ends meet’, ‘moderately comfortable financially’, ‘very comfortable financially’, and ‘refused/don’t know’. The available responses to *MentalStress* are ‘all of the time’, ‘most of the time’, ‘some of the time’, ‘a little of the time’, ‘none of the time’, and ‘refused/don’t know’.

¹²The ethical aspects of the survey were approved by the Human Research Ethics Committee at the University of Melbourne (Reference number: 2021-14006-14669-1).

3.2.2. Current and Future Spending Questions

The second set of selected TTPN questions provides information about consumers' current and expected spending relative to their pre-pandemic level. They are asked about:

Q8. (*CurrSpend*) their current spending compared to the beginning of 2020,

Q9. (*ExpSpend*) their expected spending in 6 months compared to the beginning of 2020.

The available responses to both *CurrSpend* and *ExpSpend* are 'a lot more', 'more', 'same as at the beginning of 2020', 'less', 'a lot less', and 'refused/don't know'.

3.3. Descriptive Statistics

We divide consumers into three groups by their current and expected spending (*CurrSpend* and *ExpSpend*):¹³ (i) Increase (those who had increased or expected to increase their spending), (ii) Keep the same (those who had kept or expected to keep the same level of spending), and (iii) Decrease (those who had decreased or expected to decrease their spending). Similarly, we group consumers by their stress condition (*FinStress* and *MentalStress*): (i) Under stress, (ii) Neutrals ('made ends meet' for financial condition; felt depressed or anxious 'some of the time' for mental condition), and (iii) Not under stress.¹⁴

Table 1 gives the proportions of consumers by their current and expected spending (Panel A1), and by their stress condition (Panel B1) in each of the survey waves and in the combined dataset. All proportion statistics are weighted and weights are constructed from stratification factors that sum to 1. For example, in July 2020, when asked about their current spending relative to the beginning of 2020, 20.6% of consumers had increased

¹³Descriptive statistics by demographics and survey questions are in Table B3 in Appendix B.

¹⁴The question about feeling depressed and anxious is about assessing symptoms/experiences and not about assessing the presence of a clinical diagnosis or disorder.

their spending, 33.2% had kept their spending the same and 44.8% had decreased their spending (Panel A1, column for July 2020). The sum of 'Increase', 'Keep the same' and 'Decrease' may not add up to 100% because there is a small proportion of consumers (less than 3%) stating 'Don't know/Refused'. For brevity, the results for this 'Don't know/Refused' group are not provided here. Panels A2 and B2 provide the corresponding CSI for each consumer group in Panels A1 and B1. The corresponding CSIs for these consumer groups (Panel A2, column for July 2020) are 97.2, 97.3, and 77.3.

Insert Table 1 here

The statistics in Panel A1 for the three survey periods show the adverse impact of the pandemic on consumer spending. In July 2020, the majority of Australians was just out of the first national lockdown except for those in the state of Victoria (Australia's second most populous state) which entered the second lockdown. Both international and state borders were closed. The Australian economy posted a quarterly decline in gross domestic product (GDP) of 6.8% in June 2020, marking the beginning of Australia's first recession since the early 1990s. The unemployment rate peaked at 7.5% in July 2020. The July 2020 survey shows that only 20.6% of consumers had increased their spending, relative to pre-pandemic levels, and the majority (44.8%) had decreased their spending. However, by November 2020 when restrictions had been eased across the country, 32.3% of consumers had increased their spending and just 35.6% had decreased their spending. The statistics for future spending tell a similar story.

The statistics for financial stress and mental distress in Panel B1 show that, over the three survey periods, the proportion of consumers not under financial stress was between 41.3% and 45.2% while the proportion of consumers not under mental distress was relatively stable around 56.0%. Despite the gradual easing of restrictions and the gradual

opening of the economy, the proportion of consumers under financial stress increased from 22.2% in July 2020 to 26.2% in November 2020 while the proportion of consumers under mental distress increased from 16.0% to 22.8% over the same period. Over the whole sample, 23.9% reported to be under financial stress and 19.0% under mental distress.

The CSIs in Panel A2 and Panel B2 show that consumers across categories by spending and stress condition, became increasingly more optimistic over the three survey periods. The CSI for each group rose with each subsequent survey (a higher value of CSI means a higher level of optimism and 100 is the neutral mark). There is a clear difference in the level of optimism across the three consumers groups by their spending behaviours (Panel A2). Particularly, those who had increased or expected to increase their spending were considerably more optimistic than those who had decreased or expected to decrease their spending. The finding is in line with the positive relationship between sentiment and spending (Ludvigson, 2004; Gillitzer and Prasad, 2018). Surprisingly, Panel B2 shows that consumers under stress appeared to be more optimistic than those not under stress with the only one exception in July 2020 when financially comfortable consumers (a CSI of 94.9) were more optimistic than financially stressed ones (a CSI of 84.3).

Table 2 cross-tabulates spending with stress conditions over the whole sample. Each row reports the spending behaviour of a consumer group defined by stress condition. For simplicity, we do not report the proportion having spent the same or expecting to spend the same. This proportion together with the 'Increase' and 'Decrease' proportions adds up approximately to 100.0% with a small proportion of less than 1.0% reporting 'Don't know/Refused' to the spending questions.

Insert Table 2 here

The statistics in Table 2 reveal that a much larger proportion of financially and men-

tally stressed consumers indicated that they had increased or expected to increase their spending compared to not-under-stress consumers. 45.8% of consumers under financial stress had increased their spending compared to just 17.2% of financially comfortable consumers. 51.2% of mentally distressed consumers had increased their spending as compared to just 17.5% of those not under mental distress. The statistics for future spending are similar. The increase in spending among stressed consumers is consistent with the emotions regulating consumption in psychology where the consumption or purchase of a good or service is for the purpose to alleviating, repairing or managing an emotion; see [Kemp and Kopp \(2011\)](#) *op cit* and [Kemp et al. \(2014\)](#).

3.3.1. Stress, Sentiment and Spending

Table 2 established that the stressed spend more but for each group, there is an additional channel of emotions, the sentiment channel. To analyse further the transmission channels of negative emotions, we first group consumers into four groups by financial stress and by mental distress: (i) *financially and mentally stressed*, (ii) *only financially stressed*, (iii) *only mentally distressed*, and (iv) *not under any stress* (all others). We then divide each group further into sub-groups of *optimists* ($CSI_i > 100$) and *pessimists* ($CSI_i < 100$); those with a neutral sentiment ($CSI_i = 100$) are not reported here. The spending patterns of these eight groups are in Table 3.

Insert Table 3 here

Each row gives the results for a consumer group. The proportions of consumers who had kept or expected to keep their spending ‘the same’ are omitted for ease of demonstration. The last column gives the proportion of consumers in each group in the sample. The sum of this column is 84.5% meaning that the other 25.5% consist of ‘neutral’ consumers

and those with 'Don't know/refused' responses to stress questions; they are not reported here. The sample proportion statistics show that 9.8% of consumers in the sample were under both financial stress and mental distress and had a non-neutral sentiment. 11.8% were only financially stressed and 7.1% were only mentally distressed. The majority of consumers (55.7%) had a non-neutral sentiment and reported no financial or mental stress.

Table 3 reveals several important stylised facts demonstrating the complex impact of emotions on spending, and motivating our empirical investigation in Section 4. First, regardless of their stress conditions, optimists in a consumer group tend to spend more than pessimists, confirming the importance of sentiment in spending well established in the economics literature. Second, consumers under no stress were the least likely to have spent more or expect to spend more regardless of their sentiment. And third, more under stress pessimists had increased spending (41.8%, 25.4% and 20.5%) than not under stress optimists (19.1%). Going forward, a similar proportion of stressed pessimists (27.1%, 29.2%, and 27.9%) and not stressed optimists (29.5%) expects to increase spending. This shows that when emotions triggered by stress and sentiment have opposite impacts on spending, those produced by stress can dominate.

Table 3 also shows that the spending behaviours of *only financially stressed* and *only mentally distressed* are very similar. The only difference between these two groups is that *only mentally distressed* optimists were more likely to have spent more (46.3%) or expect to spend more (60.1%) than *only financially stressed* optimists (35.6% and 31.3%). This difference is likely due to the downward pressure on consumption of *only financially stressed* from the financial strain. *Only mentally distressed* optimists are not constrained by their financial condition.

The upward pressure of stress on spending is well documented in the psychology and

marketing literature. [Liu et al. \(2018\)](#) find that stressed individuals tend to develop high materialism values. [Durante and Laran \(2016\)](#), [Di Crosta et al. \(2021\)](#) and [Lunardo et al. \(2022\)](#) suggest that consumers increase spending to gain control over their environment. In [Lunardo et al. \(2022\)](#) the lack of control leads to a rise in consumption of vice foods and beverages while the increase in spending is toward necessities in [Durante and Laran \(2016\)](#) and [Di Crosta et al. \(2021\)](#).

To investigate whether the rise in consumption among consumers under stress is in necessities (utilitarian consumption) or in non-necessities (hedonic consumption), we replicate the exercise in [Table 3](#) but use the responses to *GoodTime2Buy* on consumer spending intention for major household items which is indicative of actual durable goods consumption ([Gillitzer and Prasad, 2018](#)). These statistics are in [Table 4](#). Regardless of their stress condition, optimists have considerably higher spending intentions for durable goods than pessimists, indicating that optimists spend more on non-necessities while pessimists spent more on necessities, in line with [Durante and Laran \(2016\)](#) and [Di Crosta et al. \(2021\)](#).

Insert [Table 4](#) here

4. Empirical Analysis

4.1. Two Transmission Channels of Negative Emotions

The two transmission channels of stress-triggered negative emotions to spending are illustrated in [Figures 1 and 2](#). In both figures, there are three sets of consumers, those who are not stressed (No stress), those who are mentally distressed (Mental distress) and those who are financially stressed (Financial stress). There is a fourth sub-group, those who

are mentally and financially stressed, given as the intersection of the two sets of stressed respondents. The ‘no stress’ set is in grey and is the control group in our analysis.

Insert Figures 1 and 2 here

For all groups, we only focus on two possible spending decisions in periods t and $t + 1$, ‘Increase spending’ and ‘Decrease spending’ which allows us to identify the two transmission channels.¹⁵ For consumers who are not stressed, neither economics nor psychology, have clear predictions without additional information. This is represented by arrows going from this group to all four selected spending possibilities. Predictions differ for the stressed groups.

In economics, financial stress is a reflection of excessive spending. A rise in spending in t can cause financial stress, indicated by the arrow from ‘Increase spending’ in t to ‘Financial stress’. To alleviate this financial stress, consumers cut back on future consumption shown as an arrow from ‘Financial stress’ to ‘Decrease spending’ in $t + 1$. Economics has no clear predictions for the effects of mental distress on current and future spending, illustrated by the absence of arrows involving mental distress in Figure 1.

The psychology transmission channel is in Figure 2. According to psychologists, stressed consumers can use spending as an emotion-regulating strategy to cope with the stress. Specifically, stressed consumers may increase current and/or future spending to invoke positive emotions from consumption to mitigate the effects of the negative emotions caused by the stress. This mechanism is illustrated by the pointed arrows from financial and mental stress to ‘Increase spending’ in t and $t + 1$. Psychologists recognize that excessive current spending can lead to financial stress, illustrated by the pointed

¹⁵Other possible decisions are to leave spending unchanged in either periods. These decisions do not offer clear directions to identify the transmission channels and are excluded for clarity of our analysis.

arrow from ‘Increase spending’ in t to financial stress.

The two transmission channels lead to different spending profiles for financially stressed consumers in t and $t + 1$. Economists predict that if an increase in spending in t leads to financial stress, a decrease in spending in $t + 1$ should follow - a negative relationship between spending in periods t and $t + 1$ for financially stressed consumers who had spent more in period t .

Despite the endogeneity between financial stress and ‘Increase spending’ in period t , psychologists predict that if an increase in spending in t is associated with financial stress, an increase in spending in period $t + 1$ is likely due to the need to cope with the stress - a positive relationship between spending decisions in periods t and $t + 1$ for financially stressed consumers who had spent more in period t .

4.1.1. Empirical Model for Transmission Channels

To identify the two transmission channels, we investigate the future spending profile of financially stressed consumers conditional on their current spending profile. Current and expected spending profiles each have five possible outcomes. For ease of demonstration, we convert the categorical question on current spending, $Q8$, into five dummy variables, $CurrSpend_j$ for $j = 1, \dots, 5$, as follows:

$$CurrSpend_{j,i} = \begin{cases} 1, & \text{if } Q8_i = j \text{ for } j = 1, \dots, 5 \text{ and } i = 1, \dots, N \\ 2, & \text{otherwise.} \end{cases} \quad (3)$$

with $j = 1$ indicating ‘spent a lot more’ and $j = 5$ ‘spent a lot less’. For example, $CurrSpend_{1,i} = 1$ indicates that consumer i had ‘spent a lot more’. In the application below, $j = 5$ ‘spent a lot less’ is omitted by construction. Employing $Q8$ in its original

categorical form leads to the same empirical findings.¹⁶ The transformation into separate dummy variables, one for each category, makes the estimation results intuitively easier to interpret and to identify the transmission channels.

We estimate the following ordered logit model:

$$ExpSpend_i = \sum_{j=1}^4 \theta_j CurrSpend_{j,i} + \beta CSI_i + \sum_{p=1}^2 \gamma_p Macro_p + \sum_{l=1}^m \phi_l Control_{l,i} + e_i. \quad (4)$$

θ_j 's are loading coefficients that capture the relationship between current and future spending and are the parameters of interest. CSI_i is the individual CSI for respondent i from equation (2). Recall that CSI_i is a composite measure that includes both information about fundamentals and an autonomous sentiment component. For macroeconomic conditions, we use monthly observations of the aggregate unemployment rate and the official monetary policy interest rate that correspond to each survey wave as controls in $Macro_p$ for $p = 1, 2$.¹⁷ $Control_{l,i}$ for $l = 1, \dots, m$ are respondent-specific demographic factors.¹⁸ Initially, we utilise respondent i 's location, gender, age, occupation, education, income, and the socio-economic index of respondent i 's postcode as respondent-specific controls. In the final model, we only include respondents' location, gender and the socio-economic index as the other demographic controls are mostly insignificant.¹⁹

¹⁶These results are available on request.

¹⁷We also consider quarterly GDP growth and the inflation rate as controls but their considerable publication lags and low-frequency observations result in insignificant estimates and collinearity. We also consider survey dates to control for any daily news, locally or nationally, that may influence respondents' spending behaviour. Most of their estimated parameters are insignificant, likely because their impacts have been covered by other included variables.

¹⁸Many papers have demonstrated the impact of consumer characteristics on expectations; see, for example, Bryan and Venkatu (2001), Dräger et al. (2016), Claus and Nguyen (2020) and Binder (2021).

¹⁹The full results with all of respondents' demographic controls are available on request.

Location is to control for the possible influence of differing restrictions between states as well as between metro and rural areas within a state during the pandemic. Gender is to control for possibly different impacts of stress on men and women. Every 5 years, the Australian Bureau of Statistics (ABS) provides a set of Socio-Economic Indexes for Areas (SEIFA) that rank areas in Australia according to relative socio-economic advantage and disadvantage. The indexes are based on information from the five-yearly Census of Population and Housing and are highly correlated.²⁰ We include the Index of Relative Socio-economic Advantage and Disadvantage (IRSAD) which ranks areas on a continuum from most disadvantaged to most advantaged (Australian Bureau of Statistics, 2016). IRSAD is constructed on a set of variables measuring occupational, financial, and educational disparities between areas. An area with a high score on this index has a relatively high incidence of advantage and a relatively low incidence of disadvantage. We match the reported postcodes of respondents with IRSAD values by postcodes in 2016 (the latest available) to give an IRSAD reading for each respondent. We use IRSAD as a control for the socio-economic condition of a respondent's residential area. Using alternative indexes does not change the results quantitatively or qualitatively.

β , γ_p , and ϕ_l are also loading coefficients. β captures the impact of sentiment, γ_p the impacts of current macroeconomic conditions (proxied by the unemployment rate and the policy interest rate), and ϕ_l the impacts of consumer-specific factors (location, gender and socio-economic condition of residential area).

4.1.2. Estimation Results for the Transmission Channels

The estimation results for equation (4) are in Table 5. Our main focus is the future spending profile of financially stressed consumers, conditional on their current spending

²⁰For more information, see <https://www.abs.gov.au/ausstats/abs@.nsf/mf/2033.0.55.001>.

profile. For completeness, Table 5 provides four sets of results. Panel A gives the results for financially and mentally stressed consumers, Panel B gives the results for consumers under only financial stress, Panel C gives the results for consumers under only mental distress, and Panel D shows those for consumers under no stress. The table only presents the key estimates of interest. Full results are in Appendix C. Each panel contains two sets of estimates, in log odds and in odds ratios.

Insert Table 5 here

Recall that the dummy variables for current spending, $CurrSpend_{j,i}$, takes the values of 1 (belonging to spending category j) and 2 (otherwise). The ‘spent a lot less’ dummy, $CurrSpend_{5,i}$, is omitted due to collinearity. For expected spending, the scale is 1 to 5 with 1 for ‘spending a lot more’ and 5 for ‘spending a lot less’. The signs and magnitudes of the parameter estimates for the θ_j ’s are key. For financially stressed consumers, economists anticipate θ_1 (‘spent a lot more’) and θ_2 (‘spent more’) to be negative as the financially stressed, having spent more in t , should cut back on expected spending in $(t + 1)$ - the negative relationship between spending decisions in t and $(t + 1)$ in Figure 1.

The parameter estimates in Table 5 can be interpreted in two ways. A log-odds estimate of 5.520 for financially and mentally stressed consumers who had ‘spent a lot more’ in Panel A indicates that having ‘spent a lot more’ led to an increase of 5.520 in the log odds of ‘expecting to spend a lot more’ compared to all other possible future spending options combined. Alternatively, the estimate can be converted into an odds ratio of 249.742, meaning that for those having ‘spent a lot more’, the odds of ‘expecting to spend a lot more’ are 249.742 times greater compared to the rest.

The estimates in all four panels are positive and significant. Surprising to economists, the results for the stressed are consistent with Figure 2 not Figure 1. Financially stressed

consumers are not cutting back on spending. The estimates in all the panels indicate that those who had spent ‘a lot more’ or ‘more’ are more likely to increase spending in the future than those who had spent less. This difference in the likelihood of increasing future spending is statistically significant as the lower bounds of the estimates for ‘Spend a lot more’ and ‘Spend more’ are greater than the upper bounds of the estimates for ‘Spent less’ in all the panels, except for Panel C (only mentally distressed).

Importantly, the magnitudes of the estimates across the panels show that financially and mentally stressed consumers who had spent more are the most likely to increase future spending, followed by consumers under only financial stress, in line with the psychology channel of negative emotions. Next, we investigate the independent and joint effects of financial and mental stress and if and how budget constraints affect spending decisions of financially stressed consumers.

4.2. Effects of Stress on Spending

Formally, the change in consumer i ’s consumption at time t , Δc_{it} , can be expressed as:

$$\Delta c_{it} = f(\mathbf{s}_{it}, \mathbf{x}_t, e_{it}), \quad (5)$$

where $\mathbf{s}_{it}$ is a vector containing consumer-specific factors relevant for consumption while $\mathbf{x}_t$ is a vector containing common factors. e_{it} is the idiosyncratic error relating to current spending. $f(\cdot)$ is the function capturing the impact of $\mathbf{s}_{it}$ and $\mathbf{x}_t$ on Δc_{it} . The expected change in consumer i ’s consumption at time $t + h$, conditional on available information at time t , denoted Ω_t , can be expressed as:

$$E(\Delta c_{i,t+h} | \Omega_t) = f(\mathbf{s}_{it}, \mathbf{x}_t, u_{it}). \quad (6)$$

with u_{it} being the idiosyncratic error relating to future spending.

Traditionally, $\mathbf{s}_{it}$ includes consumer-specific demographic and economic factors such as gender, age, education, income, employment status, and economic expectations. Common economic factors in $\mathbf{x}_t$ capture changes in general economic conditions at time t such as labour market conditions and interest rates. Non-economic factors are assumed to be irrelevant for consumer spending. This assumption is likely too restrictive in practice.

We include CSI as a control in our analysis for two reasons. First, sentiment reflects consumer attitudes driven by economic fundamentals. Second, sentiment also has a demonstrated autonomous emotional component. Negative attitudes embodied in the CSI put downward pressure on spending while positive attitudes have the opposite effect. Including sentiment allows comparing the impact of the two negative emotions.

As exhibited in equations (5) and (6), the influence of consumer-specific and common factors on spending can manifest in the cross-sectional and the time dimensions. With our cross-sectional survey data, we focus on a cross-sectional analysis of how the variation in the level of stress across consumers explains the variation in spending behaviour, while controlling for other factors.

4.2.1. Empirical Model for Effects of Stress

To study the independent and the joint impacts of financial stress and mental distress on consumer spending behaviour in a simple framework, we convert the categorical questions on financial and mental conditions, $Q6$ and $Q7$, into two binary dummy variables,

FinStress and *MentalStress*, as follows:

$$FinStress_i = \begin{cases} 1, & \text{if } Q6_i = 1 \text{ or } Q6_i = 2 \text{ for } i = 1, \dots, N \\ 0, & \text{otherwise} \end{cases} \quad (7)$$

$$MentalStress_i = \begin{cases} 1, & \text{if } Q7_i = 1 \text{ or } Q7_i = 2 \text{ for } i = 1, \dots, N \\ 0, & \text{otherwise} \end{cases} \quad (8)$$

FinStress_i takes the value of 1 (under financial stress) if consumer *i* reports to be ‘very financially stressed’ ($Q6_i = 1$) or ‘moderately financially stressed’ ($Q6_i = 2$), and 0 otherwise (not under financial stress). ‘Refused/don’t know’ responses are removed. Similarly, *MentalStress_i* takes the value of 1 (under mental distress) if consumer *i* reports to ‘feel depressed all the time’ ($Q7_i = 1$) or ‘most of the time’ ($Q7_i = 2$), and 0 otherwise (not under mental distress).

An alternative way to convert *Q6* and *Q7* into dummy variables is to transform each into 5 separate binary dummies, corresponding to a category in the original questions. This alternative approach is described in Appendix D. Regression results are similar and, importantly, only the dummies for $Q6_i = 1, 2$ and $Q7_i = 1, 2$ are statistically significant. So, without loss of information, we choose to proceed with the dummies constructed in (7) and (8). Their interaction is straightforward to interpret.

Based on equations (5) and (6), we estimate the following ordered logit model:

$$\begin{aligned} \Delta Spending_i = & \alpha FinStress_i + \theta MentalStress_i + \lambda (FinStress_i * MentalStress_i) \\ & + \beta CSI_i + \sum_{p=1}^2 \gamma_p Macro_p + \sum_{l=1}^m \phi_l Control_{l,i} + e_i. \end{aligned} \quad (9)$$

$\Delta Spending_i$ denotes the change in consumer *i*’s current/expected spending, for $i = 1, \dots, N$ and *N* is the number of respondents. We use the survey data on *CurrSpend*

(Q8) and *ExpSpend* (Q9) as approximates for changes in consumer i 's current and expected spending. CSI_i , $Macro_p$, and $Control_{l,i}$ are as defined in Section 4.1.1.

$\alpha, \theta, \lambda, \beta, \gamma_p$, and ϕ_l are loading coefficients. α captures the independent impact of financial stress on spending and θ the independent impact of mental distress. λ captures the joint impact of financial stress and mental distress and gives insights into the spending behaviour of consumers under both financial and mental stress. In this set up, mental stress is also an instrument to identify the two transmission channels as predicted by psychologists and economists. β captures the impact of sentiments, γ_p the impacts of current macroeconomic conditions (proxied by the unemployment rate and the policy interest rate), and ϕ_l the impacts of consumer-specific factors (location, gender and socio-economic condition of residential area).

We estimate two models, one for current spending and the other for future spending. Recall that for the stress dummy variables, 1 indicates 'under stress' and 0 indicates 'not under stress'. For the spending variables, the scale is 1 to 5 with 1 'spending a lot more' and 5 'spending a lot less'. A negative (positive) significant coefficient on the stress variable indicates that stress increases (reduces) consumer spending. The sentiment measure (CSI) is bounded between 0 and 200 with 0 being the most pessimistic. So, a negative (positive) parameter estimate on CSI means that optimism puts upward (downward) pressure on spending.

4.2.2. Effects of Stress on Current Spending

The estimation results for current spending are in Table 6. The estimated coefficients on the two stress variables and on their interaction term are statistically significant and negative, showing a positive relationship between stress and current spending. However, due to the potential endogeneity between financial stress and current spending, as

demonstrated in Figures 1 and 2, the estimated coefficients on financial stress and on the interaction term are not causal. They could reflect the effect of either the economics or the psychology transmission channel or both.

Insert Table 6 here

There is no endogeneity in the relationship between mental distress and current spending. The estimated coefficient on mental distress shows that consumers under only mental distress are more likely to have spent more than consumers not under mental distress, providing evidence for the psychology transmission channel of stress to spending. The similarity between the estimated coefficients on financial stress and mental distress points to the operation of the psychology channel in the transmission of financial stress to spending. Stress leads to a perceived lack of control over one's environment (Durante and Laran, 2016) and this lack of control can result in sub-optimal consumer decision making (Han and Broniarczyk, 2021), here, increasing spending despite being financially stressed.

The parameter estimates can be interpreted in two ways. For example, an estimated impact of -0.395 for mental distress on current spending suggests that for a one unit increase in mental distress (going from 0 to 1), we expect an increase of 0.395 in the log odds of being in a spending-more category (or a decrease of 0.395 in the log odds of being in a spending-less category). Alternatively, this estimate can be converted into an odds ratio of 0.673, meaning that for a one unit increase in mental distress, the odds of being in the 'spending a lot more' category versus the rest of the categories combined are 0.673 greater (or the odds of being in the 'spending a lot less' category versus the rest combined are 0.673 smaller). The alternative presentation of the estimated parameters in odds ratios is in Appendix E.

Turning to the estimated impact of sentiments (CSI), its negative and significant co-

efficient means that optimists are more likely to have spent more than pessimists. Having controlled directly for the economic and health impacts of the pandemic (via financial stress and mental distress), consumer-specific factors and macroeconomic conditions, the significant coefficient on CSI reveals the autonomous component of sentiment. Its transmission channel aligns with that of economics. Optimists with positive emotions are more likely to spend than pessimists with negative emotions, consistent with the findings in Benhabib and Spiegel (2018); Gillitzer and Prasad (2018); Lagerborg et al. (2022).

For location, there are only two significant coefficients, one for VIC metro (the state of Victoria's metropolitan area) and WA rural (the state of Western Australia's rural area).²¹ The positive coefficient for VIC metro indicates that consumers in this region have spent less while the negative coefficient for WA rural indicates that consumers in that region have spent more, *ceteris paribus*. During the pandemic, Victoria imposed one of the longest aggregate periods of strict lockdown in the world, totalling 262 days.²² This likely played a part in the reported reduction in current spending among VIC metro consumers. Western Australia imposed the strictest and longest interstate and international border closure policies (the last Australian state to open international borders)²³ and WA consumers, particularly those in rural areas, were the least affected by lockdowns. Indeed, the average CSI reading of WA rural over the three survey waves at 103.4 was the highest of the 13

²¹The location question has 13 categorical values corresponding to 13 regions defined by Australian states/territories and by metro/rural classification. This is transformed into 13 binary dummies (0 and 1) in estimation.

²²For more information, see <https://theconversation.com/covid-in-victoria-262-days-in-lockdown-3-stunning-successes-and-4-avoidable-failures-172408>; Accessed 1 March 2023.

²³WA has the lowest COVID-19 confirmed deaths per 100 residents (0.035 as of February 2023) among major states and territories in Australia; see <https://covidlive.com.au/report/deaths-per-population> and <https://www.bbc.com/news/world-australia-60582788>; Accessed 1 March 2023.

regions and the only region with an optimistic CSI reading.²⁴ This likely contributed to the increase in current spending among WA rural consumers during the survey periods.

Among other controls, gender and the social-economic condition of a respondent's residential area are relevant for current spending. Their positive and significant coefficients indicate that males and those in less advantaged areas are more likely to have spent more. Interestingly, males, older people and people in less advantaged areas faced the highest mortality rates during the pandemic; see [Australian Bureau of Statistics \(2022\)](#). This means that mortality was more salient for these demographic groups than for other parts of the population. [Arndt et al. \(2004\)](#) and [Rindfleisch and Burroughs \(2004\)](#) find that, when mortality becomes more salient, people become more inclined to materialism while [Cappetto and Tadros \(2022\)](#) demonstrate that the impact of stress on spending is larger for materialistic individuals.

The estimated impact of the unemployment rate is not significant. Over our survey waves, the unemployment rate gradually fell from a high of 7.5% in July 2020 to 6.9% in September and 6.8% in November 2020. Even at 6.8%, the unemployment rate was still significantly higher than the pre-COVID-19 level of around 5.2%. Importantly, in response to the COVID-19 pandemic, the Australian federal government released a large fiscal spending program of A\$291 billion (up to May 2021) which included several income-support payments such as 'JobKeeper' and 'JobSeeker' to lessen the negative economic impact of the COVID-19 pandemic on consumers.²⁵ These are likely the reasons behind the insignificant impact of the unemployment rate on spending. The cash rate had been at 0.25% in July and September 2020 (down from 0.75% in February 2020) and was subsequently reduced to a historic low of 0.10% in November 2020. The estimated impact

²⁴Other regions recorded either pessimistic or neutral CSI readings which are available on request.

²⁵For more information, see <https://treasury.gov.au/coronavirus>; Accessed 1 March 2023.

of the policy interest rate is significant and positive, indicating that an easing in monetary policy put upward pressure on spending, consistent with economic theory.

4.2.3. Effects of Stress on Future Spending

Turning to the impacts of financial stress and mental distress on future spending in Table 7, the results show that financial stress alone does not cause consumers to increase their future spending (insignificant coefficient). There is no endogeneity between self-reported financial stress in the current period and future spending. The insignificant coefficient implies that financial considerations outweigh emotions in future spending decisions of only financially stressed consumers, suggesting a dominance of the economics channel over the psychology channel for this consumer group. The mentally distressed consumers who experience no financial strains expect to spend more (significant negative coefficient). These consumers use future spending to regular negative emotions caused by stress, as predicted by the psychology transmission channel.

Insert Table 7 here

The significant and negative coefficient on the interaction terms between financial stress and mental distress demonstrates the dominance of the psychology transmission channel over the economics channel for this consumer group. Financial worries coupled with mental distress cause consumers to increase future spending. Financially and mentally stressed consumers are likely to experience more intense negative emotions than those who are only financially stressed or only mentally stressed. These more intense emotions seem to lead to a stronger need to use consumption to “undo” (Kemp and Kopp, 2011) the negative emotions borne from the stress. As a result, instead of cutting back on future spending, the doubly stressed consumers expect to spend more.

The significant and negative coefficient on CSI shows that optimistic consumers are more likely to increase their future spending. Comparing the relative magnitudes of the coefficients capturing the impacts of CSI on current and on future spending, -0.009 and -0.013 (the difference is statistically significant), shows that the sentiment factor is even more important for future spending. The coefficients for location and the unemployment rate are not significant. The estimated impacts of the socio-economic condition, gender and monetary policy are significant and tell similar stories to those for current spending.

4.2.4. What if Budget Constraints are Binding?

A natural question is: what happens to spending when budget constraints are binding?²⁶ *CurrFamFin* (Q1) in CASiE provides information about consumers' current family finances relative to 12 months ago and is a proxy for an annual change in consumer real household disposable income. The survey waves in 2020 occurred during a period of expansionary monetary and fiscal policies in response to the COVID-19 pandemic. These policies had positive impacts on real household disposable income and hence spending.

We use the question *CurrFamFin* to study the transmission channels when budget constraints are binding while accounting for the effects of the large monetary and fiscal easing during the pandemic. We divide consumers into 3 groups by their reported current family finances compared to 12 months ago, 'better-off' (18.9% of respondents), 'same' (46.9%) and 'worse-off' (33.5%). We re-estimate the model in equation (9) with current and future spending for each of these groups. Among consumers in the 'worse-off' category, budget constraints are likely binding strongly for those under financial stress.

In our sample, of those reporting 'worse-off' current family finances, 34.7% reported

²⁶In practice, consumers' budget constraints may also include informal financial support channels such as financial help from family and friends in addition to borrowing from financial institutions.

to be under financial stress and 20.7% reported to be under mental distress. Among those with ‘same’ current family finances, 13.9% were under financial stress and 12.4% under mental distress. For those with ‘better-off’ current family finances, 31.5% were under financial stress and 34.1% under mental distress. Note that consumers with ‘worse-off’ current family finances also include high-income earners whose family finances were adversely affected by the pandemic while those with ‘better-off’ current family finances also include low-income earners whose family finances benefited from the expansionary macroeconomic policies during the pandemic.

Table 8 presents the key results for current spending of the three consumer groups. The full results are in Appendix F. Since there is the potential endogeneity between financial stress and current spending, we only focus on the estimates for the independent impact of mental distress. The estimated impact of mental distress on current spending for consumers with ‘worse-off’ and ‘same’ current family finances in Panels A and B are negative but not statistically significant. Strongly binding budget constraints are likely the reason that these mentally stressed consumers are not using consumption as a coping strategy. The economics channel dominates. Among consumers with ‘better-off’ current family finances (Panel C), those under mental distress are more likely to have spent more (negative and significant coefficient), revealing the psychology channel.

Insert Table 8 here

Turning to the results for future spending, the key estimates for the three consumers groups are in Table 9 and the full results are in Appendix F. Recall that there is no endogeneity between financial stress and future spending. The estimated impacts of stress on future spending for consumers with ‘worse-off’ current family finances (Panel A) are insignificant. The estimated independent impacts of financial stress for consumers with

‘same’ and ‘better-off’ current family finances in Panels B and C are also insignificant. This set of results is consistent with economic theory and shows the dominance of the economics channel when budget constraints are binding.

Insert Table 9 here

The estimated independent impacts of mental distress are significant and negative (increase future spending) for consumers with ‘same’ and ‘better-off’ current family finances in Panels B and C, revealing the psychology channel. Importantly, the estimated joint impact of financial and mental stress is significant and negative for consumers with ‘better-off’ current family finances (Panel C). The negative emotions caused by the two stresses are so intense that they override the financial considerations. The psychology channel can dominate the economics channel when budget constraints are not binding.

4.3. Two Negative Emotions With Opposite Impacts

The empirical findings seem to indicate conflicting results. Negative emotions caused by stress put upward pressure on consumer spending while negative emotions (pessimism) identified by the autonomous component in the CSI put downward pressure on spending. Stressed consumers spend more while pessimists spend less. Stress and pessimism both have negative valence yet their consumption impacts differ.

These results align with the appraisal-tendency hypothesis of emotions. The discussion below heavily draws on [Keltner et al. \(1993\)](#) and [Lerner et al. \(2015\)](#). The causes of the emotion matter for subsequent decisions. The (perceived) causes, or antecedent appraisals, can trigger a cognitive pre-disposition, or tendency, to assess future events in line with the antecedent appraisal. For example, anger and sadness are associated with different antecedent appraisals. Unlike sadness, anger is typically caused by others. These

two different antecedent appraisals affect subsequent choices and judgments. Angry people tend to view subsequent events as ‘predictable and under human control’ while sad people tend to view subsequent events as ‘unpredictable and under situational control’. These views affect decisions. For example, sad people are more risk averse than angry people. So, two emotions with negative valence can lead to different behavioural responses.

Thus far, movements in the autonomous component of the CSI have only been identified as a reaction to exogenous events: mass shootings in [Lagerborg et al. \(2022\)](#), electoral outcomes in [Benhabib and Spiegel \(2018\)](#), [Claus and Nguyen \(2018\)](#) and [Gillitzer and Prasad \(2018\)](#) and house price shocks experienced by friends in [Makridis \(2022\)](#). The degree to which someone/something other than the self seems to be responsible is high. This exogeneity of the pessimism (and optimism) likely leads to: (i) an appraisal tendency where the negative events are perceived as ‘predictable and under human control’, and (ii) a causal attribution of individual responsibility to life outcomes.

In contrast, the negative emotions brought on by stress are endogenous.²⁷ Stress causes anxiety, worry or feelings of not coping ([French and Vigne, 2019](#)) which likely leads to: (1) an appraisal tendency where negative events are perceived as ‘unpredictable and under situational control’, and (ii) a causal attribution of fate or situational circumstances as responsible for life outcomes. A fatalistic view of the world is compatible with the rise in spending of financially stressed consumers. The incentive to cut back on spending is low if consumers believe that situational circumstances drive the financial stress.

²⁷The degree to which someone/something other than oneself seems to be responsible is low.

5. Conclusion

We study the impact of negative emotions on consumer economic behaviour. We use self-reported stress to identify negative emotions and find that under-stress consumers use consumption as a coping strategy to regulate the negative emotions caused by the stress. For financially stressed consumers, rather than cutting back on consumption as implied by conventional economics, the emotion-regulating impulse can dominate, leading to an increase in spending. But when budget constraints are binding, the spending response to stress is muted. Our results strongly support psychology's notion that '[e]motions powerfully, predictably, and pervasively influence decision making.' (Lerner et al., 2015). A handful of empirical studies in macroeconomics explore the role of emotions in economic decision making. Our findings here suggest that branching out into the large and complex literature on emotions in psychology (see, for example, Lerner et al., 2015) and biology (see, for example, Dubois and Adolphs, 2015) could greatly improve our understanding of consumer economic behaviour and the economy (see Wälde and Moors, 2017).

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Tables and Figures

Figure 1: Effects of Negative Emotions on Current and Future Spending in Economics

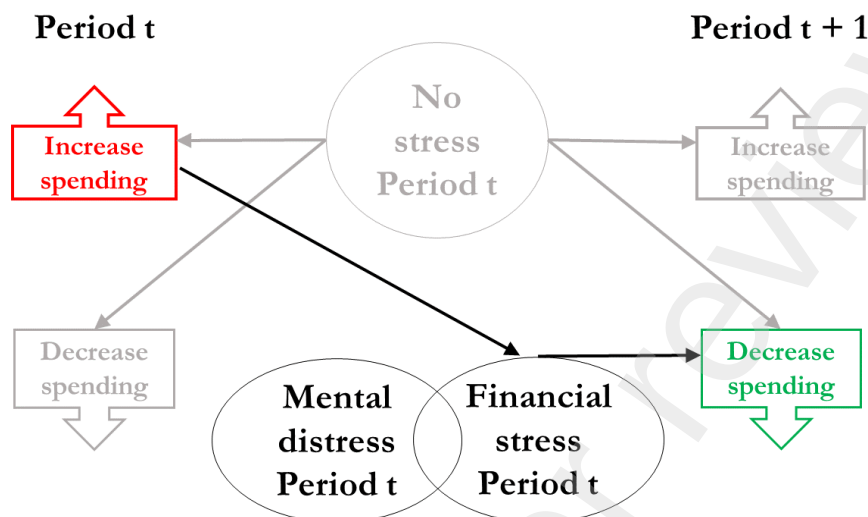


Figure 2: Effects of Negative Emotions on Current and Future Spending in Psychology

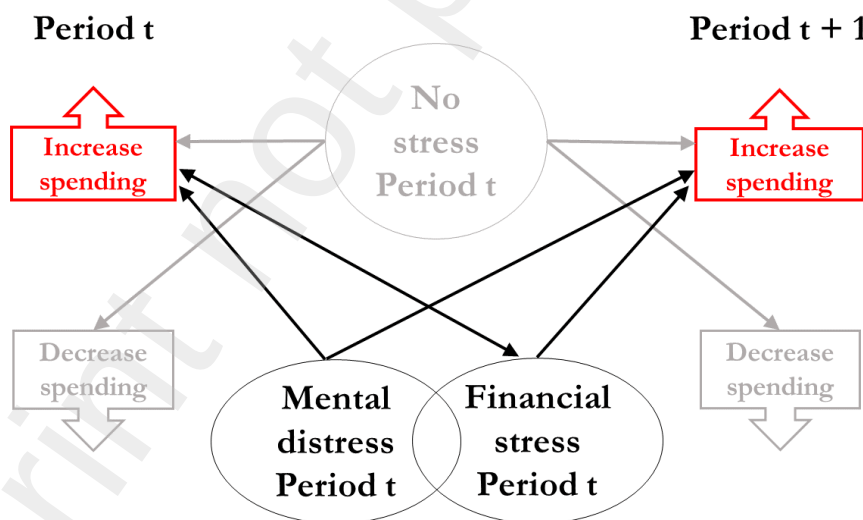


Table 1: Descriptive Statistics for Spending, Stress and Sentiment

Panel A1: Weighted Proportions by Spending (%)					
		Jul-20	Sep-20	Nov-20	Combined
Current Spending	Increase	20.6%	21.1%	32.3%	24.7%
	Keep the same	33.2%	31.0%	29.9%	31.4%
	Decrease	44.8%	46.4%	35.6%	42.3%
Future Spending	Increase	25.8%	26.5%	34.1%	28.8%
	Keep the same	39.2%	39.7%	39.0%	39.3%
	Decrease	32.2%	30.2%	23.0%	28.5%
Panel A2: Consumer Sentiment Index by Spending					
		Jul-20	Sep-20	Nov-20	Combined
Current Spending	Increase	97.2	114.8	125.5	114.6
	Keep the same	97.3	92.8	104.7	98.2
	Decrease	77.3	85.5	95.9	85.5
Future Spending	Increase	103.7	111.0	130.0	116.3
	Keep the same	90.7	95.1	103.7	96.5
	Decrease	73.1	78.4	86.9	78.7
Panel B1: Weighted Proportions by Stress Condition (%)					
		Jul-20	Sep-20	Nov-20	Combined
Financial condition	Under stress	22.2%	23.5%	26.2%	23.9%
	Make ends meet	34.3%	29.3%	28.6%	30.7%
	Not under stress	41.3%	45.2%	42.5%	43.0%
Mental condition	Under stress	16.0%	18.2%	22.8%	19.0%
	Feel anxious sometime	26.8%	23.8%	19.2%	23.3%
	Not under stress	55.9%	56.2%	55.9%	56.0%
Panel B2: Consumer Sentiment Index by Stress Condition					
		Jul-20	Sep-20	Nov-20	Combined
Financial condition	Under stress	84.3	100.0	118.4	101.8
	Make ends meet	84.2	84.4	93.2	87.1
	Not under stress	94.9	97.7	113.3	102.0
Mental condition	Under stress	100.1	102.6	128.4	112.3
	Feel anxious sometime	84.5	90.5	103.1	91.7
	Not under stress	86.9	92.9	102.8	94.2

NOTE: Each survey period in July, September, November 2020 consists of around 1200 consumers and the combined dataset consists of 3601 consumers.

Table 2: Spending Behaviour by Stress Condition

		Current Spending		Future Spending	
		Increase	Decrease	Increase	Decrease
Financial Condition	Under stress	45.8%	36.0%	41.4%	31.6%
	Make ends meet	19.1%	43.7%	22.1%	29.8%
	Not under stress	17.2%	45.8%	27.6%	26.4%
Mental Condition	Under stress	51.2%	30.4%	50.3%	23.3%
	Feel anxious sometime	20.8%	45.4%	24.1%	33.5%
	Not under stress	17.5%	45.8%	23.9%	28.3%

NOTE: Statistics are based on the combined set of 3601 consumers from three survey periods.

Table 3: Spending Behaviour by Stress Condition and Sentiment

		Current Spending		Future Spending		Sample Proportion
		Increase	Decrease	Increase	Decrease	
Financially and mentally stressed	Pessimists	41.8%	46.2%	27.1%	48.5%	4.0%
	Optimists	84.2%	7.8%	82.1%	5.3%	5.8%
Only financially stressed	Pessimists	25.4%	50.3%	29.2%	44.6%	7.0%
	Optimists	35.6%	38.5%	31.3%	26.3%	4.8%
Only mentally distressed	Pessimists	20.5%	53.3%	27.9%	37.9%	3.6%
	Optimists	46.3%	20.7%	60.1%	6.7%	3.5%
Not under any stress	Pessimists	15.2%	51.1%	18.1%	35.1%	31.6%
	Optimists	19.1%	40.5%	29.5%	21.6%	24.1%

NOTE: Statistics are based on the combined set of 3601 consumers from three survey periods. The sum of the ‘Sample Proportion’ column is 84.5% meaning that 84.5% of surveyed consumers were used for this analysis. The other 25.5% are ‘neutral’ consumers who were neither optimistic nor pessimistic ($CSI_i = 100$) and hence they were not used in this analysis.

Table 4: Spending Intentions for Durable Goods by Stress Condition and Sentiment

		Good	Some Good Some Bad	Bad	Don't know or Refused
Financially and mentally stressed	Pessimists	7.9%	31.9%	56.1%	4.1%
	Optimists	82.8%	17.2%	0.0%	0.0%
Only financially stressed	Pessimists	10.5%	40.4%	47.2%	1.9%
	Optimists	51.7%	37.6%	8.6%	2.1%
Only mentally distressed	Pessimists	17.3%	35.7%	43.3%	3.7%
	Optimists	64.4%	32.1%	2.3%	1.1%
Not under any stress	Pessimists	13.1%	40.0%	42.6%	4.3%
	Optimists	60.8%	34.5%	3.0%	1.6%

NOTE: Statistics are based on the combined set of 3601 consumers from three survey periods. The results here are based on Q5 on consumers’ ‘buying intention’ for major household items (durable goods).

Table 5: Identification of Transmission Channels

Panel A: Financially and mentally stressed						
Current Spending Categories	Log Odd	[95% C.I.]		Odd Ratio	[95% C.I.]	
	Coeff.	Lower	Upper	Coeff.	Lower	Upper
Spent a lot more	5.520	4.189	6.852	249.742	65.952	945.708
Spent more	3.470	2.393	4.548	32.144	10.946	94.396
Spent the same	2.635	1.707	3.564	13.949	5.512	35.303
Spent less	0.974	0.188	1.759	2.648	1.207	5.809
Spent a lot less	(omitted)					
Observation	339					
Log likelihood	-338.877					
Pseudo R^2	0.334					
Panel B: Only financially stressed						
Current Spending Categories	Log Odd	[95% C.I.]		Odd Ratio	[95% C.I.]	
	Coeff.	Lower	Upper	Coeff.	Lower	Upper
Spent a lot more	4.753	3.563	5.943	115.925	35.281	380.903
Spent more	3.100	2.341	3.858	22.188	10.389	47.386
Spent the same	2.174	1.490	2.858	8.791	4.435	17.425
Spent less	1.472	0.832	2.113	4.359	2.297	8.273
Spent a lot less	(omitted)					
Observation	391					
Log likelihood	-496.107					
Pseudo R^2	0.159					
Panel C: Only mentally distressed						
Current Spending Categories	Log Odd	[95% C.I.]		Odd Ratio	[95% C.I.]	
	Coeff.	Lower	Upper	Coeff.	Lower	Upper
Spent a lot more	3.893	2.368	5.418	49.042	10.674	225.334
Spent more	2.345	1.212	3.477	10.431	3.361	32.373
Spent the same	1.545	0.627	2.463	4.688	1.873	11.739
Spent less	1.545	0.532	2.558	4.688	1.703	12.904
Spent a lot less	(omitted)					
Observation	260					
Log likelihood	-321.062					
Pseudo R^2	0.178					
Panel D: Not under any stress						
Current Spending Categories	Log Odd	[95% C.I.]		Odd Ratio	[95% C.I.]	
	Coeff.	Lower	Upper	Coeff.	Lower	Upper
Spent a lot more	2.084	1.211	2.957	8.040	3.358	19.249
Spent more	2.391	1.960	2.823	10.929	7.100	16.823
Spent the same	1.280	0.928	1.633	3.598	2.528	5.120
Spent less	0.419	0.063	0.775	1.521	1.065	2.171
Spent a lot less	(omitted)					
Observation	2,372					
Log likelihood	-2829.312					
Pseudo R^2	0.069					

NOTE: 'Coeff.' denotes estimated coefficient, 'S.E.' denotes robust standard error. 'C.I.' denotes confidence interval. The results are based on the combined set of 3601 consumers from three survey periods. Respondents stating 'Don't know/Refused' to the question on Current/Future Spending are dropped.

Table 6: Effects of Stress on Current Spending

Regressors	Coeff.	S.E.	<i>p</i> -value	[95% C.I.]	
	Log Odds			Lower	Upper
FinStress	-0.327	0.121	0.007	-0.563	-0.090
MenStress	-0.395	0.129	0.002	-0.647	-0.143
(FinStress)*(MenStress)	-1.088	0.226	0.000	-1.531	-0.645
CSI	-0.009	0.001	0.000	-0.011	-0.008
NSW metro	(omitted)				
NSW rural	0.003	0.126	0.981	-0.243	0.249
VIC metro	0.408	0.114	0.000	0.185	0.631
VIC rural	0.228	0.149	0.126	-0.064	0.521
QLD metro	0.150	0.129	0.244	-0.103	0.403
QLD rural	0.175	0.130	0.178	-0.080	0.429
SA metro	-0.043	0.143	0.766	-0.323	0.238
SA metro	0.144	0.164	0.380	-0.178	0.466
WA metro	0.180	0.128	0.158	-0.070	0.431
WA rural	-0.233	0.132	0.077	-0.491	0.026
TAS metro	0.077	0.180	0.670	-0.276	0.430
TAS rural	-0.103	0.394	0.794	-0.875	0.669
ACT	0.319	0.229	0.162	-0.129	0.767
Male	(omitted)				
Female	0.424	0.063	0.000	0.300	0.548
Socio-economic Index	0.002	0.001	0.000	0.001	0.003
Unemployment Rate	0.053	0.126	0.676	-0.195	0.300
Cash rate	1.974	0.582	0.001	0.834	3.114
Observation	3,422				
Log likelihood	-4854.547				
Pseudo R^2	0.060				
Cut 1	-0.607	1.004		-2.574	1.360
Cut 2	0.828	1.003		-1.138	2.795
Cut 3	2.445	1.006		0.473	4.417
Cut 4	4.002	1.009		2.024	5.981

NOTE: 'Coeff.' denotes estimated coefficient, 'S.E.' denotes robust standard error. 'C.I.' denotes confidence interval. 'NSW' denotes New South Wales, 'VIC' Victoria, 'QLD' Queensland, 'SA' South Australia, 'WA' Western Australia, 'TAS' Tasmania, and 'ACT' Australian Capital Territory. Cut i , for $i = 1, \dots, 4$, are estimated cut points to define the changes among categories of the dependent variable. The results are based on the combined set of 3601 consumers from three survey periods. Respondents stating 'Don't know/Refused' to the question on Current Spending are dropped from the estimation sample.

Table 7: Effects of Stress on Future Spending

Regressors	Coeff.	S.E.	<i>p</i> -value	[95% C.I.]	
	Log Odds			Lower	Upper
FinStress	-0.005	0.128	0.969	-0.256	0.246
MenStress	-0.549	0.137	0.000	-0.818	-0.279
(FinStress)*(MenStress)	-0.657	0.242	0.007	-1.132	-0.182
CSI	-0.013	0.001	0.000	-0.014	-0.011
NSW metro	(omitted)				
NSW rural	-0.010	0.130	0.938	-0.265	0.245
VIC metro	-0.006	0.116	0.958	-0.233	0.220
VIC rural	-0.033	0.148	0.824	-0.324	0.258
QLD metro	0.158	0.135	0.240	-0.106	0.423
QLD rural	0.065	0.137	0.634	-0.203	0.333
SA metro	0.152	0.147	0.301	-0.136	0.439
SA metro	0.162	0.171	0.342	-0.172	0.497
WA metro	0.156	0.140	0.268	-0.120	0.431
WA rural	0.074	0.146	0.612	-0.212	0.360
TAS metro	-0.166	0.187	0.376	-0.532	0.201
TAS rural	-0.129	0.327	0.693	-0.770	0.512
ACT	-0.081	0.218	0.709	-0.509	0.346
Male	(omitted)				
Female	0.317	0.065	0.000	0.189	0.444
Socio-economic Index	0.001	0.001	0.099	0.000	0.002
Unemployment Rate	0.167	0.130	0.198	-0.087	0.422
Cash rate	1.355	0.603	0.025	0.173	2.537
Observation	3,369				
Log likelihood	-4529.662				
Pseudo R^2	0.055				
Cut 1	-1.577	1.043		-3.622	0.468
Cut 2	0.311	1.041		-1.730	2.351
Cut 3	2.246	1.042		0.205	4.288
Cut 4	3.821	1.042		1.778	5.863

NOTE: 'Coeff.' denotes estimated coefficient, 'S.E.' denotes robust standard error. 'C.I.' denotes confidence interval. 'NSW' denotes New South Wales, 'VIC' Victoria, 'QLD' Queensland, 'SA' South Australia, 'WA' Western Australia, 'TAS' Tasmania, and 'ACT' Australian Capital Territory. Cut i , for $i = 1, \dots, 4$, are estimated cut points to define the changes among categories of the dependent variable. The results are based on the combined set of 3601 consumers from three survey periods. Respondents stating 'Don't know/Refused' to the question on Future Spending are dropped from the estimation sample.

Table 8: Effects of Stress on Current Spending by Current Family Finances

Panel A: Respondents with ‘Worse-off’ Current Family Finances					
Regressors	Coeff.	S.E.	p-value	[95% C.I.]	
	Log Odds			Lower	Upper
FinStress	-0.105	0.151	0.487	-0.400	0.191
MenStress	-0.032	0.201	0.872	-0.426	0.361
(FinStress)*(MenStress)	-0.375	0.347	0.280	-1.054	0.305
CSI	-0.003	0.002	0.101	-0.006	0.001
Unemployment Rate	0.098	0.222	0.659	-0.337	0.533
Cash rate	2.290	1.074	0.033	0.186	4.395
Observation	1,098				
Log likelihood	-1655.228				
Pseudo R^2	0.018				
Panel B: Respondents with ‘Same’ Current Family Finances)					
Regressors	Coeff.	S.E.	p-value	[95% C.I.]	
	Log Odds			Lower	Upper
FinStress	-0.472	0.236	0.045	-0.934	-0.009
MenStress	-0.230	0.214	0.282	-0.649	0.189
(FinStress)*(MenStress)	-1.641	0.412	0.000	-2.449	-0.832
CSI	-0.005	0.002	0.003	-0.009	-0.002
Unemployment Rate	-0.032	0.184	0.861	-0.394	0.329
Cash rate	1.693	0.853	0.047	0.022	3.365
Observation	1,667				
Log likelihood	-2182.729				
Pseudo R^2	0.040				
Panel C: Respondents with ‘Better-off’ Current Family Finances					
Regressors	Coeff.	S.E.	p-value	[95% C.I.]	
	Log Odds			Lower	Upper
FinStress	-0.921	0.309	0.003	-1.527	-0.315
MenStress	-1.303	0.260	0.000	-1.813	-0.793
(FinStress)*(MenStress)	-0.660	0.431	0.125	-1.504	0.184
CSI	-0.011	0.003	0.000	-0.016	-0.006
Unemployment Rate	-0.072	0.317	0.820	-0.693	0.549
Cash rate	2.929	1.404	0.037	0.177	5.681
Observation	653				
Log likelihood	-852.781				
Pseudo R^2	0.167				

NOTE: ‘Coeff.’ denotes estimated coefficient, ‘S.E.’ denotes robust standard error. ‘C.I.’ denotes confidence interval. The results are based on the combined set of 3601 consumers from three survey periods. Respondents stating ‘Don’t know/Refused’ to the question on Current Spending are dropped from the estimation sample.

Table 9: Effects of Stress on Future Spending by Current Family Finances

Panel A: Respondents with ‘Worse-off’ Current Family Finances					
Regressors	Coeff. Log Odds	S.E.	<i>p</i> -value	[95% C.I.]	
				Lower	Upper
FinStress	0.229	0.158	0.146	-0.080	0.538
MenStress	0.105	0.249	0.674	-0.383	0.593
(FinStress)*(MenStress)	-0.253	0.381	0.506	-1.000	0.493
CSI	-0.009	0.002	0.000	-0.012	-0.006
Unemployment Rate	0.207	0.229	0.365	-0.241	0.655
Cash rate	0.722	1.068	0.499	-1.371	2.815
Observation	1,075				
Log likelihood	-1554.583				
Pseudo R^2	0.020				
Panel B: Respondents with ‘Same’ Current Family Finances)					
Regressors	Coeff. Log Odds	S.E.	<i>p</i> -value	[95% C.I.]	
				Lower	Upper
FinStress	-0.260	0.237	0.271	-0.724	0.203
MenStress	-0.717	0.206	0.001	-1.120	-0.313
(FinStress)*(MenStress)	-0.687	0.435	0.115	-1.539	0.166
CSI	-0.009	0.002	0.000	-0.012	-0.005
Unemployment Rate	0.092	0.189	0.628	-0.279	0.462
Cash rate	1.761	0.898	0.050	0.001	3.522
Observation	1,644				
Log likelihood	-2026.408				
Pseudo R^2	0.032				
Panel C: Respondents with ‘Better-off’ Current Family Finances					
Regressors	Coeff. Log Odds	S.E.	<i>p</i> -value	[95% C.I.]	
				Lower	Upper
FinStress	0.131	0.353	0.711	-0.561	0.823
MenStress	-1.211	0.274	0.000	-1.748	-0.674
(FinStress)*(MenStress)	-0.920	0.472	0.051	-1.845	0.004
CSI	-0.016	0.003	0.000	-0.021	-0.011
Unemployment Rate	0.502	0.331	0.129	-0.146	1.151
Cash rate	0.891	1.333	0.504	-1.723	3.505
Observation	645				
Log likelihood	-820.754				
Pseudo R^2	0.149				

NOTE: ‘Coeff.’ denotes estimated coefficient, ‘S.E.’ denotes robust standard error. ‘C.I.’ denotes confidence interval. The results are based on the combined set of 3601 consumers from three survey periods. Respondents stating ‘Don’t know/Refused’ to the question on Future Spending are dropped from the estimation sample.

Appendix For Online Publication

A. CASiE and TTPN Survey Questions

A.1. CASiE Survey Questions

Q1. [Curent Family Finances] About how people are getting along financially these days? Would you say you and your family are better-off financially or worse-off than you were at this time last year?

1. Better-off
2. Same
3. Worse-off
4. Uncertain/Don't Know/It depends

Q2. [Future Family Finance] Looking ahead to this time NEXT YEAR. Do you expect you and your family to be better-off financially - or worse-off - or about the same as now?

1. Better-off
2. Same
3. Worse-off
4. Uncertain/Don't Know/It depends

Q3. [Economic Conditions next 12 months] Thinking of economic conditions in Australia as a whole. During the next 12 months, do you expect we will have good times financially, or bad times, or what?

1. Good times
2. Good with qualifications
3. Some good, some bad
4. Bad with qualifications
5. Bad times
6. Uncertain/Don't Know/It depends

Q4. [Economic Conditions next 5 years] Looking ahead, what would you say is more likely? That in Australia as a whole, we will have continuous good times during the next 5 years or so, or we will have some bad times - or what?

1. Continuous good times

2. Good with qualifications
3. Some good, some bad
4. Some bad with qualifications
5. Some bad times
6. Uncertain/Don't Know/It depends

Q5. [Consumer Buying Intention] Next, about the major things people buy for their homes. Speaking generally, do you think now is a good time or a bad time, for people to buy major household items?

1. Good
2. Some good, some bad
3. Bad
4. Don't know/Uncertain

Q1C1. [Consumer Dwelling Buying Intention] Generally speaking, do you think now is a good time, or a bad time for PEOPLE to buy a dwelling?

1. Good
2. Some good, some bad
3. Bad
4. Don't know/Uncertain

A.2. TTPN Survey Questions

Q6. [Financial Stress] How would you describe your current financial conditions, in terms of paying for essential goods and services such as bills, rents, mortgages?

1. Very financially stressed
2. Moderately financially stressed
3. Making ends meet
4. Moderately comfortable financially
5. Very comfortable financially
6. Refused/Don't know

Q7. [Mental Distress] During the past week about how often did you feel depressed or anxious?

1. All the time

2. Most of the time
3. Some of the time
4. A little of the time
5. None of the time
6. Refused/Don't know

Q8. [Current Spending] Compared to the beginning of 2020, is your total spending today

1. A lot more
2. More
3. Same as at the beginning of 2020
4. Less
5. A lot less
6. Refused/Don't know

Q9. [Future Spending] Compared to the beginning of 2020, and thinking about your spending six months FROM now, will your total spending be

1. A lot more
2. More
3. Same as at the beginning of 2020
4. Less
5. A lot less
6. Refused/Don't know

A.3. Demographic Questions

Gender

1. Male
2. Female

Age

1. 18-24 years
2. 25-34 years

3. 35-44 years
4. 45-49 years
5. 50-54 years
6. 55-64 years
7. 65+ years

Location

1. NSW - METRO
2. NSW - RURAL
3. VIC - METRO
4. VIC - RURAL
5. QLD - METRO
6. QLD - RURAL
7. SA - METRO
8. SA - RURAL
9. WA - METRO
10. WA - RURAL
11. TAS - METRO
12. . TAS - RURAL
13. . ACT - METRO

Occupation

1. Managers
2. Professionals
3. Community and Personal Service Workers
4. Technicians and Trades Workers
5. Clerical and Administrative Workers
6. Sales Workers
7. Machinery Operators and Drivers
8. Labourers
9. Retired

10. Unemployed/home duties
11. Refused

Education

1. Below Year 10
2. Year 10
3. Year 11
4. Year 12 or equivalent
5. Certificate III/IV
6. Advanced Diploma/Diploma
7. Bachelor Degree
8. Graduate Diploma/Graduate Certificate
9. Postgraduate Degree
10. Refused/ not applicable

Household Income

1. Up to \$20,000
2. >\$20,000 - \$30,000
3. >\$30,000 - \$40,000
4. >\$40,000 - \$50,000
5. >\$50,000 - \$60,000
6. >\$60,000 - \$70,000
7. >\$70,000 - \$80,000
8. >\$80,000 - \$90,000
9. >\$90,000 - \$100,000
10. >\$100,000
11. Refused

B. Survey Information and Descriptive Statistics for Key Survey Questions

Table B1: CASiE and TTPN Survey Periods and Questions

CASiE	TTPN	Survey period	CASiE	TTPN	
Month	Wave	Start date	CSI	Stress	Spending
Jul-2020	Wave14	6/07/2020	Q1 to Q5	Q6 & Q7	Q8 & Q9
Sep-2020	Wave18	31/08/2020	Q1 to Q5	Q6 & Q7	Q8 & Q9
Nov-2020	Wave22	2/11/2020	Q1 to Q5	Q6 & Q7	Q8 & Q9

NOTE: Survey periods always started on Monday and lasted for 5 or 6 days depending on when a sample of 1200 stratified respondents was achieved. Detailed survey questions are in the Appendix.

Table B2: Scoring Scheme to Convert Ordinal Responses into Numerical Numbers

<i>CurrFamFin</i> (Q1) and <i>ExpFamFin12M</i> (Q2)	<i>ExpEcon12M</i> (Q3) and <i>ExpEcob5Y</i> (Q4)	<i>GoodTime2Buy</i> (Q5)	Score ($R_{i,t}^j$)
Better-off	Good times	Good	200
	Good with qualifications		150
Same	Some good, some bad	Some good, some bad	100
	Bad with qualifications		50
Worse-off	Bad time	Bad	0
Don't know/uncertain	Don't know/uncertain	Don't know/uncertain	Removed

NOTE: The University of Michigan Survey of US Consumers also uses a similar scheme. Alternative schemes, such as 1 to 5 or -100, -50, 0, 50, 100, etc., are simply scaling versions of this scheme and provide qualitatively similar results.

Table B3: Descriptive Statistics for Key Survey Questions (weighted proportions in %)

Male	48.97	NSW metro	21.57
Female	51.03	NSW rural	11.73
		VIC metro	20.56
18-24 years	11.54	VIC rural	6.18
25-34 years	19.16	QLD metro	9.99
35-44 years	17.08	QLD rural	10.18
45-49 years	8.58	SA metro	5.62
50-54 years	7.88	SA metro	1.56
55-64 years	15.13	WA metro	8.25
Over 65 years	20.64	WA rural	1.99
		TAS metro	0.43
		TAS rural	0.6
		ACT	1.33
Q1 - <i>CurFamFin</i>		Q3 - <i>ExpEcon12M</i>	
Better-off	18.87	Good times	11.39
Same	46.9	Good with qualifications	9.74
Worse-off	33.46	Some good some bad	37.62
Don't know/Uncertain	0.77	Bad with qualifications	15.07
		Bad times	24.74
		Don't know/Uncertain	1.44
Q2 - <i>ExpFamFin12M</i>		Q4 - <i>ExpEcon5Y</i>	
Better-off	23.43	Good times	11.13
Same	53.91	Good with qualifications	15.61
Worse-off	19.94	Some good some bad	46.18
Don't know/Uncertain	2.71	Bad with qualifications	11.56
		Bad times	13.16
		Don't know/Uncertain	2.36
Q5 - <i>GoodTime2Buy</i>			
Good	33.34		
Some good some bad	40.54		
Bad	23.15		
Don't know/Uncertain	2.97		
Q6 - <i>FinStress</i>		Q7 - <i>MentalStress</i>	
Very financially stressed	10.06	Feeling depressed all the time	8.73
Moderately financially stressed	13.87	Feeling depressed most of the time	10.24
Making ends meet	30.7	Feeling depressed some of the time	23.28
Moderately comfortable financially	33.21	Feeling depressed a little of the time	24.39
Very comfortable financially	9.75	Feeling depressed none of the time	31.58
Refused/Don't know	2.41	Refused/Don't know	1.78
Q8 - <i>CurrSpend</i>		Q9 - <i>ExpSpend</i>	
A lot more	8.65	A lot more	7.6
More	15.99	More	21.16
Same as the beginning of 2020	31.34	Same as the beginning of 2020	39.28
Less	27.3	Less	20.4
A lot less	14.93	A lot less	8.04
Refused/Don't know	1.79	Refused/Don't know	3.52

NOTE: The weighted proportions (%) are based on the combined set of 3601 consumers from three survey periods in July, September, November 2020

C. Full Results for Transmission Channels

This appendix provides the full estimation results (in log odd) for Table 5. Table C1 provides the results for Panel A of Table 5, Table C2 for Panel B of Table 5, and Table C3 for Panel C of Table 5. The results in odds ratio are available on request.

Table C1: Full Results for Panel A of Table 5

Regressors	Coeff.	S.E.	<i>p</i> -value	[95% C.I.]	
	Log Odds			Lower	Upper
Q8.Spent a lot more	5.520	0.679	0.000	4.189	6.852
Q8.Spent more	3.470	0.550	0.000	2.393	4.548
Q8.Spent the same	2.635	0.474	0.000	1.707	3.564
Q8.Spent less	0.974	0.401	0.015	0.188	1.759
Q8.Spent a lot less	(omitted)				
CSI	-0.010	0.002	0.000	-0.014	-0.006
NSW metro	(omitted)				
NSW rural	0.226	0.395	0.567	-0.547	0.999
VIC metro	0.493	0.344	0.152	-0.182	1.167
VIC rural	-0.456	0.466	0.328	-1.370	0.458
QLD metro	-0.127	0.522	0.808	-1.151	0.897
QLD rural	0.604	0.595	0.310	-0.561	1.769
SA metro	0.626	0.420	0.136	-0.196	1.448
SA metro	0.571	0.520	0.273	-0.449	1.591
WA metro	-1.373	0.645	0.033	-2.637	-0.108
WA rural	0.342	0.560	0.542	-0.755	1.439
TAS metro	0.957	1.224	0.435	-1.443	3.356
ACT	-1.466	0.426	0.001	-2.301	-0.631
Male	(omitted)				
Female	0.222	0.268	0.409	-0.304	0.748
Socio-economic Index	-0.001	0.002	0.733	-0.004	0.003
Unemployment Rate	0.242	0.504	0.632	-0.746	1.230
Cash rate	-1.809	2.235	0.418	-6.189	2.571
Observation	339				
Log likelihood	-338.877				
Pseudo R^2	0.334				
Cut 1	20.239	5.078		10.286	30.192
Cut 2	22.337	5.140		12.262	32.412
Cut 3	23.820	5.200		13.627	34.013
Cut 4	25.552	5.265		15.233	35.871

NOTE: ‘Coeff.’ denotes estimated coefficient, ‘S.E.’ denotes robust standard error. ‘C.I.’ denotes confidence interval. ‘NSW’ denotes New South Wales, ‘VIC’ Victoria, ‘QLD’ Queensland, ‘SA’ South Australia, ‘WA’ Western Australia, ‘TAS’ Tasmania, and ‘ACT’ Australian Capital Territory. Cut i , for $i = 1, \dots, 4$, are estimated cut points to define the changes among categories of the dependent variable. The results are based on the combined set of 3601 consumers from three survey periods in July, September, November 2020. Respondents stating ‘Don’t know/Refused’ to the question on Current/Future Spending are dropped from the estimation sample.

Table C2: Full Results for Panel B of Table 5

Regressors	Coeff.	S.E.	<i>p</i> -value	[95% C.I.]	
	Log Odds			Lower	Upper
Q8.Spent a lot more	4.753	0.607	0.000	3.563	5.943
Q8.Spent more	3.100	0.387	0.000	2.341	3.858
Q8.Spent the same	2.174	0.349	0.000	1.490	2.858
Q8.Spent less	1.472	0.327	0.000	0.832	2.113
Q8.Spent a lot less	(omitted)				
CSI	-0.003	0.002	0.184	-0.007	0.001
NSW metro	(omitted)				
NSW rural	0.181	0.413	0.661	-0.628	0.990
VIC metro	-0.284	0.332	0.393	-0.934	0.367
VIC rural	-0.837	0.458	0.067	-1.735	0.060
QLD metro	-0.039	0.325	0.905	-0.676	0.598
QLD rural	-0.102	0.346	0.769	-0.779	0.576
SA metro	-0.323	0.411	0.432	-1.130	0.483
SA metro	0.892	0.660	0.176	-0.401	2.185
WA metro	0.243	0.336	0.470	-0.415	0.900
WA rural	0.805	0.490	0.101	-0.156	1.766
TAS metro	-0.376	0.731	0.607	-1.810	1.057
Male	(omitted)				
Female	0.199	0.202	0.326	-0.198	0.595
Socio-economic Index	0.000	0.001	0.997	-0.003	0.003
Unemployment Rate	0.387	0.388	0.318	-0.373	1.146
Cash rate	1.172	2.056	0.569	-2.858	5.202
Observation	391				
Log likelihood	-496.107				
Pseudo R^2	0.159				
Cut 1	20.219	3.525		13.310	27.128
Cut 2	22.788	3.563		15.804	29.772
Cut 3	24.546	3.598		17.495	31.597
Cut 4	26.025	3.624		18.921	33.129

NOTE: 'Coeff.' denotes estimated coefficient, 'S.E.' denotes robust standard error. 'C.I.' denotes confidence interval. 'NSW' denotes New South Wales, 'VIC' Victoria, 'QLD' Queensland, 'SA' South Australia, 'WA' Western Australia, 'TAS' Tasmania, and 'ACT' Australian Capital Territory. Cut i , for $i = 1, \dots, 4$, are estimated cut points to define the changes among categories of the dependent variable. The results are based on the combined set of 3601 consumers from three survey periods in July, September, November 2020. Respondents stating 'Don't know/Refused' to the question on Current/Future Spending are dropped from the estimation sample.

Table C3: Full Results for Panel C of Table 5

Regressors	Coeff.	S.E.	<i>p</i> -value	[95% C.I.]	
				Lower	Upper
Spent a lot more	3.893	0.778	0.000	2.368	5.418
Spent more	2.345	0.578	0.000	1.212	3.477
Spent the same	1.545	0.468	0.001	0.627	2.463
Spent less	1.545	0.517	0.003	0.532	2.558
Spent a lot less	(omitted)				
CSI	-0.015	0.003	0.000	-0.021	-0.008
NSW metro	(omitted)				
NSW rural	0.154	0.574	0.788	-0.971	1.280
VIC metro	0.102	0.441	0.817	-0.761	0.965
VIC rural	1.568	0.583	0.007	0.426	2.709
QLD metro	1.044	0.513	0.042	0.037	2.050
QLD rural	0.560	0.536	0.296	-0.491	1.610
SA metro	0.057	0.601	0.925	-1.122	1.235
SA metro	0.496	0.677	0.463	-0.830	1.823
WA metro	0.436	0.557	0.433	-0.655	1.527
WA rural	1.030	0.538	0.055	-0.023	2.084
TAS metro	0.059	0.555	0.916	-1.029	1.147
TAS rural	-1.037	0.606	0.087	-2.225	0.151
ACT	-0.274	0.452	0.544	-1.159	0.612
Male	(omitted)				
Female	0.038	0.266	0.888	-0.485	0.560
Socio-economic Index	0.004	0.002	0.025	0.001	0.008
Unemployment Rate	0.367	0.551	0.506	-0.714	1.447
Cash rate	-2.431	2.354	0.302	-7.045	2.184
Observation	260				
Log likelihood	-321.062				
Pseudo R^2	0.178				
Cut 1	19.786	6.176		7.682	31.891
Cut 2	21.678	6.188		9.549	33.807
Cut 3	23.732	6.228		11.525	35.939
Cut 4	25.186	6.251		12.933	37.438

NOTE: ‘Coeff.’ denotes estimated coefficient, ‘S.E.’ denotes robust standard error. ‘C.I.’ denotes confidence interval. ‘NSW’ denotes New South Wales, ‘VIC’ Victoria, ‘QLD’ Queensland, ‘SA’ South Australia, ‘WA’ Western Australia, ‘TAS’ Tasmania, and ‘ACT’ Australian Capital Territory. Cut i , for $i = 1, \dots, 4$, are estimated cut points to define the changes among categories of the dependent variable. The results are based on the combined set of 3601 consumers from three survey periods in July, September, November 2020. Respondents stating ‘Don’t know/Refused’ to the question on Current/Future Spending are dropped from the estimation sample.

Table C4: Full Results for Panel D of Table 5

Regressors	Coeff.	S.E.	<i>p</i> -value	[95% C.I.]	
	Log Odds			Lower	Upper
Q8.Spent a lot more	2.084	0.445	0.000	1.211	2.957
Q8.Spent more	2.391	0.220	0.000	1.960	2.823
Q8.Spent the same	1.280	0.180	0.000	0.928	1.633
Q8.Spent less	0.419	0.182	0.021	0.063	0.775
Q8.Spent a lot less	(omitted)				
CSI	-0.008	0.001	0.000	-0.010	-0.005
NSW metro	(omitted)				
NSW rural	0.040	0.156	0.797	-0.265	0.346
VIC metro	-0.162	0.152	0.287	-0.460	0.136
VIC rural	-0.091	0.178	0.611	-0.440	0.259
QLD metro	0.165	0.165	0.318	-0.158	0.487
QLD rural	-0.001	0.166	0.995	-0.326	0.324
SA metro	0.273	0.168	0.105	-0.057	0.602
SA metro	-0.012	0.195	0.953	-0.393	0.370
WA metro	0.139	0.169	0.410	-0.192	0.471
WA rural	0.002	0.168	0.989	-0.326	0.331
TAS metro	-0.251	0.203	0.216	-0.648	0.147
TAS rural	0.011	0.384	0.976	-0.741	0.764
ACT	-0.311	0.308	0.312	-0.915	0.292
Male	(omitted)				
Female	0.064	0.078	0.414	-0.090	0.218
Socio-economic Index	0.000	0.001	0.890	-0.001	0.001
Unemployment Rate	0.161	0.155	0.301	-0.144	0.465
Cash rate	0.941	0.730	0.197	-0.490	2.371
Observation	2,372				
Log likelihood	-2829.312				
Pseudo R^2	0.069				
Cut 1	8.037	1.831		4.448	11.626
Cut 2	10.616	1.831		7.027	14.204
Cut 3	13.010	1.846		9.392	16.628
Cut 4	14.995	1.846		11.377	18.613

NOTE: ‘Coeff.’ denotes estimated coefficient, ‘S.E.’ denotes robust standard error. ‘C.I.’ denotes confidence interval. ‘NSW’ denotes New South Wales, ‘VIC’ Victoria, ‘QLD’ Queensland, ‘SA’ South Australia, ‘WA’ Western Australia, ‘TAS’ Tasmania, and ‘ACT’ Australian Capital Territory. Cut i , for $i = 1, \dots, 4$, are estimated cut points to define the changes among categories of the dependent variable. The results are based on the combined set of 3601 consumers from three survey periods in July, September, November 2020. Respondents stating ‘Don’t know/Refused’ to the question on Current/Future Spending are dropped from the estimation sample.

D. Robustness Check for Stress Variables

As a robustness check for the validity of our constructed dummies for financial and mental stress in Section 4.2.1, we transform the question on financial/mental condition into 5 binary (0 and 1) dummies as follows:

$$FinStress_i^j = \begin{cases} 1, & \text{if } Q6_i = j \text{ for } j = 1, \dots, 5; i = 1, \dots, N, \\ 0, & \text{otherwise} \end{cases} \quad (10)$$

$$MentalStress_i^j = \begin{cases} 1, & \text{if } Q7_i = j \text{ for } j = 1, \dots, 5; i = 1, \dots, N. \\ 0, & \text{otherwise} \end{cases} \quad (11)$$

With these two sets of dummy variables, we estimate the following alternative ordered logit model:

$$\begin{aligned} Spending_i = & \sum_{j=1}^4 \alpha_j FinStress_i^j + \sum_{j=1}^4 \theta_j MentalStress_i^j \\ & + \beta CSI_i + \sum_{p=1}^2 \gamma_p Macro_p + \sum_{l=1}^m \phi_l Control_{l,i} + e_i. \end{aligned} \quad (12)$$

We do not include the interaction terms between financial and mental conditions in this model to get an initial analysis about their impacts on spending. The definitions of the other independent variables and the interpretation of their loading coefficients are the same as in the main model in Section 4.2.1. The estimation results for current and future spending are in Tables D1 and D2. Besides the estimated parameters of the dummies for financial and mental conditions, the estimated parameters of other independent variables are qualitatively and quantitatively similar to their counterparts in Tables 6 and 7.

Insert Tables D1 and D2 here

For the impacts of financial conditions on current spending, only the dummies for ‘very financially stressed’ and ‘moderately financially stressed’ are significant and negative, indicating that stress leads to increased current spending. Similarly, the results for mental conditions also suggest that stress puts upward pressure on spending as only the dummies for ‘feeling depressed all the time’ and ‘feeling depressed most of the time’ are significant and negative. Regarding the impacts of stress on future spending, the dummies for ‘very financially stressed’ and ‘feeling depressed all the time’ are significant and negative (increasing spending) while the dummy for ‘feeling depressed some of the time’ (neutral point) is significant and positive (reducing spending). These findings confirm the validity of our constructed dummies for financial and mental stress in Section 4.2.1.

Table D1: Current Spending Estimation Results - Robustness Check

Regressors	Coeff.	S.E.	<i>p</i> -value	[95% C.I.]	
	Log Odds			Lower	Upper
Very financially stressed	-1.267	0.196	0.000	-1.651	-0.883
Moderately financially stressed	-0.295	0.149	0.048	-0.588	-0.003
Making ends meet	-0.089	0.111	0.427	-0.307	0.130
Moderately comfortable financially	0.069	0.105	0.512	-0.137	0.276
Very comfortable financially	(omitted)				
Feeling depressed all the time	-1.217	0.184	0.000	-1.577	-0.856
Feeling depressed most of the time	-0.271	0.134	0.043	-0.533	-0.009
Feeling depressed some of the time	0.089	0.087	0.304	-0.081	0.260
Feeling depressed a little of the time	-0.001	0.079	0.990	-0.156	0.154
Feeling depressed none of the time	(omitted)				
CSI	-0.009	0.001	0.000	-0.010	-0.007
NSW metro	(omitted)				
NSW rural	-0.005	0.127	0.969	-0.253	0.243
VIC metro	0.390	0.115	0.001	0.164	0.615
VIC rural	0.235	0.149	0.115	-0.057	0.527
QLD metro	0.145	0.131	0.267	-0.111	0.402
QLD rural	0.214	0.132	0.105	-0.045	0.472
SA metro	-0.057	0.143	0.691	-0.337	0.224
SA metro	0.114	0.163	0.484	-0.206	0.434
WA metro	0.167	0.129	0.196	-0.086	0.420
WA rural	-0.245	0.134	0.067	-0.508	0.018
TAS metro	0.034	0.176	0.849	-0.311	0.379
TAS rural	-0.141	0.391	0.717	-0.907	0.624
ACT	0.321	0.228	0.158	-0.125	0.768
Male	(omitted)				
Female	0.400	0.064	0.000	0.274	0.526
Socio-economic Index	0.002	0.001	0.000	0.001	0.003
Unemployment Rate	0.064	0.128	0.614	-0.186	0.314
Cash rate	1.859	0.582	0.001	0.718	3.001
Observation	3,422				
Log likelihood	-4823.679				
Pseudo R^2	0.066				
Cut 1	-0.682	1.021		-2.683	1.319
Cut 2	0.796	1.019		-1.202	2.794
Cut 3	2.420	1.022		0.416	4.423
Cut 4	3.977	1.025		1.968	5.987

NOTE: 'Coeff.' denotes estimated coefficient, 'S.E.' denotes robust standard error. 'C.I.' denotes confidence interval. 'NSW' denotes New South Wales, 'VIC' Victoria, 'QLD' Queensland, 'SA' South Australia, 'WA' Western Australia, 'TAS' Tasmania, and 'ACT' Australian Capital Territory. Cut i , for $i = 1, \dots, 4$, are estimated cut points to define the changes among categories of the dependent variable. The results are based on the combined set of 3601 consumers from three survey periods in July, September, November 2020. Respondents stating 'Don't know/Refused' to the question on Current/Future Spending are dropped from the estimation sample.

Table D2: Future Spending Estimation Results - Robustness Check

Regressors	Coeff.	S.E.	<i>p</i> -value	[95% C.I.]	
	Log Odds			Lower	Upper
Very financially stressed	-0.633	0.217	0.003	-1.057	-0.208
Moderately financially stressed	0.152	0.150	0.312	-0.143	0.447
Making ends meet	0.143	0.111	0.198	-0.075	0.360
Moderately comfortable financially	0.061	0.104	0.559	-0.143	0.264
Very comfortable financially	(omitted)				
Feeling depressed all the time	-1.205	0.183	0.000	-1.563	-0.847
Feeling depressed most of the time	-0.204	0.146	0.163	-0.490	0.083
Feeling depressed some of the time	0.181	0.085	0.033	0.015	0.346
Feeling depressed a little of the time	0.059	0.082	0.473	-0.102	0.219
Feeling depressed none of the time	(omitted)				
CSI	-0.011	0.001	0.000	-0.013	-0.010
NSW metro	(omitted)				
NSW rural	0.004	0.128	0.976	-0.247	0.255
VIC metro	-0.007	0.116	0.954	-0.234	0.220
VIC rural	0.009	0.148	0.954	-0.282	0.299
QLD metro	0.157	0.135	0.245	-0.108	0.423
QLD rural	0.132	0.138	0.337	-0.137	0.402
SA metro	0.159	0.145	0.272	-0.125	0.443
SA metro	0.176	0.171	0.302	-0.159	0.511
WA metro	0.161	0.139	0.248	-0.112	0.433
WA rural	0.107	0.146	0.463	-0.179	0.394
TAS metro	-0.130	0.189	0.491	-0.500	0.240
TAS rural	-0.122	0.327	0.709	-0.764	0.519
ACT	-0.064	0.217	0.768	-0.490	0.362
Male	(omitted)				
Female	0.279	0.066	0.000	0.150	0.407
Socio-economic Index	0.001	0.001	0.054	0.000	0.002
Unemployment Rate	0.179	0.131	0.172	-0.078	0.435
Cash rate	1.228	0.599	0.040	0.054	2.403
Observation	3,369				
Log likelihood	-4495.538				
Pseudo R^2	0.062				
Cut 1	-1.211	1.061		-3.290	0.868
Cut 2	0.737	1.058		-1.336	2.811
Cut 3	2.684	1.059		0.608	4.760
Cut 4	4.260	1.061		2.182	6.339

NOTE: 'Coeff.' denotes estimated coefficient, 'S.E.' denotes robust standard error. 'C.I.' denotes confidence interval. 'NSW' denotes New South Wales, 'VIC' Victoria, 'QLD' Queensland, 'SA' South Australia, 'WA' Western Australia, 'TAS' Tasmania, and 'ACT' Australian Capital Territory. Cut i , for $i = 1, \dots, 4$, are estimated cut points to define the changes among categories of the dependent variable. The results are based on the combined set of 3601 consumers from three survey periods in July, September, November 2020. Respondents stating 'Don't know/Refused' to the question on Current/Future Spending are dropped from the estimation sample.

E. Effects of Stress on Spending in Odds Ratios

This appendix provides the alternative presentation of the estimation results in Tables 6 and 7 from Section 4.2.2 and 4.2.3 in odds ratios.

Table E1: Effects of Stress on Current Spending in Odds Ratios

Regressors	Coeff.	S.E.	<i>p</i> -value	[95% C.I.]	
	Odds Ratio			Lower	Upper
FinStress	0.721	0.087	0.007	0.570	0.914
MenStress	0.673	0.087	0.002	0.523	0.867
(FinStress)*(MenStress)	0.337	0.076	0.000	0.216	0.524
CSI	0.991	0.001	0.000	0.989	0.992
NSW metro	(omitted)				
NSW rural	1.003	0.126	0.981	0.784	1.283
VIC metro	1.504	0.171	0.000	1.203	1.880
VIC rural	1.257	0.187	0.126	0.938	1.683
QLD metro	1.162	0.150	0.244	0.903	1.496
QLD rural	1.191	0.154	0.178	0.924	1.535
SA metro	0.958	0.137	0.766	0.724	1.268
SA metro	1.155	0.189	0.380	0.837	1.593
WA metro	1.198	0.153	0.158	0.932	1.538
WA rural	0.792	0.104	0.077	0.612	1.026
TAS metro	1.080	0.195	0.670	0.759	1.537
TAS rural	0.902	0.355	0.794	0.417	1.953
ACT	1.376	0.315	0.162	0.879	2.154
Male	(omitted)				
Female	1.528	0.097	0.000	1.350	1.730
Socio-economic Index	1.002	0.001	0.000	1.001	1.003
Unemployment Rate	1.054	0.133	0.676	0.823	1.350
Cash rate	7.201	4.189	0.001	2.303	22.519
Observation	3,422				
Log likelihood	-4854.547				
Pseudo R^2	0.060				
Cut 1	-0.607	1.004		-2.574	1.360
Cut 2	0.828	1.003		-1.138	2.795
Cut 3	2.445	1.006		0.473	4.417
Cut 4	4.002	1.009		2.024	5.981

NOTE: ‘Coeff.’ denotes estimated coefficient, ‘S.E.’ denotes robust standard error. ‘C.I.’ denotes confidence interval. ‘NSW’ denotes New South Wales, ‘VIC’ Victoria, ‘QLD’ Queensland, ‘SA’ South Australia, ‘WA’ Western Australia, ‘TAS’ Tasmania, and ‘ACT’ Australian Capital Territory. Cut i , for $i = 1, \dots, 4$, are estimated cut points to define the changes among categories of the dependent variable. The results are based on the combined set of 3601 consumers from three survey periods in July, September, November 2020. Respondents stating ‘Don’t know/Refused’ to the question on Current/Future Spending are dropped from the estimation sample.

Table E2: Effects of Stress on Future Spending in Odds Ratios

Regressors	Coeff.	S.E.	<i>p</i> -value	[95% C.I.]	
	Odds Ratio			Lower	Upper
FinStress	0.995	0.127	0.969	0.774	1.278
MenStress	0.578	0.079	0.000	0.441	0.756
(FinStress)*(MenStress)	0.518	0.126	0.007	0.322	0.834
CSI	0.988	0.001	0.000	0.986	0.989
NSW metro	(omitted)				
NSW rural	0.990	0.129	0.938	0.767	1.278
VIC metro	0.994	0.115	0.958	0.792	1.247
VIC rural	0.968	0.143	0.824	0.724	1.294
QLD metro	1.172	0.158	0.240	0.899	1.526
QLD rural	1.067	0.146	0.634	0.816	1.395
SA metro	1.164	0.171	0.301	0.873	1.551
SA metro	1.176	0.201	0.342	0.842	1.643
WA metro	1.168	0.164	0.268	0.887	1.538
WA rural	1.077	0.157	0.612	0.809	1.433
TAS metro	0.847	0.159	0.376	0.587	1.223
TAS rural	0.879	0.287	0.693	0.463	1.668
ACT	0.922	0.201	0.709	0.601	1.413
Male	(omitted)				
Female	1.373	0.089	0.000	1.208	1.560
Socio-economic Index	1.001	0.001	0.099	1.000	1.002
Unemployment Rate	1.182	0.154	0.198	0.916	1.525
Cash rate	3.878	2.339	0.025	1.189	12.646
Observation	3,369				
Log likelihood	-4529.662				
Pseudo R^2	0.055				
Cut 1	-1.577	1.043		-3.622	0.468
Cut 2	0.311	1.041		-1.730	2.351
Cut 3	2.246	1.042		0.205	4.288
Cut 4	3.821	1.042		1.778	5.863

NOTE: 'Coeff.' denotes estimated coefficient, 'S.E.' denotes robust standard error. 'C.I.' denotes confidence interval. 'NSW' denotes New South Wales, 'VIC' Victoria, 'QLD' Queensland, 'SA' South Australia, 'WA' Western Australia, 'TAS' Tasmania, and 'ACT' Australian Capital Territory. Cut i , for $i = 1, \dots, 4$, are estimated cut points to define the changes among categories of the dependent variable. The results are based on the combined set of 3601 consumers from three survey periods in July, September, November 2020. Respondents stating 'Don't know/Refused' to the question on Current/Future Spending are dropped from the estimation sample.

F. Effects of Stress by Current Family Finances

This appendix provides the full estimation results for current and future spending by current family finances in Tables 8 and 9. The full results for Panels A, B and C of Table 8 are in Tables F1, F2, and F3, respectively. Similarly, the full results for Panels A, B and C of Table 9 are in Tables F4, F5, and F6, respectively.

Table F1: Current Spending of ‘Worse-off’ Current Family Finances

Regressors	Coeff.	S.E.	<i>p</i> -value	[95% C.I.]	
	Log Odds			Lower	Upper
FinStress	-0.105	0.151	0.487	-0.400	0.191
MenStress	-0.032	0.201	0.872	-0.426	0.361
(FinStress)*(MenStress)	-0.375	0.347	0.280	-1.054	0.305
CSI	-0.003	0.002	0.101	-0.006	0.001
NSW metro	(omitted)				
NSW rural	0.328	0.235	0.163	-0.132	0.789
VIC metro	0.371	0.191	0.052	-0.003	0.745
VIC rural	0.498	0.280	0.076	-0.052	1.048
QLD metro	0.549	0.228	0.016	0.103	0.996
QLD rural	0.614	0.247	0.013	0.129	1.099
SA metro	0.093	0.226	0.682	-0.350	0.535
SA metro	0.556	0.277	0.045	0.013	1.099
WA metro	0.357	0.213	0.093	-0.060	0.774
WA rural	-0.151	0.249	0.544	-0.639	0.337
TAS metro	0.353	0.311	0.257	-0.258	0.963
TAS rural	0.164	0.929	0.860	-1.657	1.984
ACT	0.086	0.372	0.817	-0.643	0.816
Male	(omitted)				
Female	0.389	0.109	0.000	0.174	0.603
Socio-economic Index	0.003	0.001	0.000	0.002	0.005
Unemployment Rate	0.098	0.222	0.659	-0.337	0.533
Cash rate	2.290	1.074	0.033	0.186	4.395
Observation	1,098				
Log likelihood	-1655.228				
Pseudo R^2	0.018				
Cut 1	2.347	1.724		-1.032	5.726
Cut 2	3.694	1.724		0.314	7.073
Cut 3	4.747	1.731		1.353	8.140
Cut 4	6.119	1.740		2.709	9.529

NOTE: ‘Coeff.’ denotes estimated coefficient, ‘S.E.’ denotes robust standard error. ‘C.I.’ denotes confidence interval. ‘NSW’ denotes New South Wales, ‘VIC’ Victoria, ‘QLD’ Queensland, ‘SA’ South Australia, ‘WA’ Western Australia, ‘TAS’ Tasmania, and ‘ACT’ Australian Capital Territory. Cut i , for $i = 1, 2, 3, 4$, are estimated cut points to define the changes among categories of the dependent variable. The results are based on the combined set of 3601 consumers from three survey periods in July, September, November 2020. Respondents stating ‘Don’t know/Refused’ to the question on Current/Future Spending are dropped from the estimation sample.

Table F2: Current Spending of ‘Same’ Current Family Finances

Regressors	Coeff.	S.E.	<i>p</i> -value	[95% C.I.]	
	Log Odds			Lower	Upper
FinStress	-0.472	0.236	0.045	-0.934	-0.009
MenStress	-0.230	0.214	0.282	-0.649	0.189
(FinStress)*(MenStress)	-1.641	0.412	0.000	-2.449	-0.832
CSI	-0.005	0.002	0.003	-0.009	-0.002
NSW metro	(omitted)				
NSW rural	-0.088	0.181	0.628	-0.442	0.267
VIC metro	0.303	0.175	0.082	-0.039	0.646
VIC rural	0.104	0.214	0.626	-0.315	0.524
QLD metro	-0.152	0.187	0.416	-0.518	0.215
QLD rural	-0.066	0.182	0.716	-0.422	0.290
SA metro	0.068	0.213	0.749	-0.350	0.487
SA metro	-0.069	0.233	0.767	-0.525	0.387
WA metro	-0.044	0.186	0.812	-0.409	0.320
WA rural	-0.357	0.197	0.070	-0.744	0.030
TAS metro	-0.189	0.270	0.485	-0.718	0.341
TAS rural	-0.089	0.447	0.843	-0.966	0.788
ACT	0.027	0.359	0.940	-0.678	0.731
Male	(omitted)				
Female	0.380	0.093	0.000	0.198	0.562
Socio-economic Index	0.002	0.001	0.017	0.000	0.003
Unemployment Rate	-0.032	0.184	0.861	-0.394	0.329
Cash rate	1.693	0.853	0.047	0.022	3.365
Observation	1,667				
Log likelihood	-2182.729				
Pseudo R^2	0.040				
Cut 1	-2.007	1.499		-4.946	0.932
Cut 2	-0.208	1.494		-3.136	2.721
Cut 3	1.902	1.496		-1.031	4.834
Cut 4	3.684	1.499		0.745	6.623

NOTE: ‘Coeff.’ denotes estimated coefficient, ‘S.E.’ denotes robust standard error. ‘C.I.’ denotes confidence interval. ‘NSW’ denotes New South Wales, ‘VIC’ Victoria, ‘QLD’ Queensland, ‘SA’ South Australia, ‘WA’ Western Australia, ‘TAS’ Tasmania, and ‘ACT’ Australian Capital Territory. Cut i , for $i = 1, 2, 3, 4$, are estimated cut points to define the changes among categories of the dependent variable. The results are based on the combined set of 3601 consumers from three survey periods in July, September, November 2020. Respondents stating ‘Don’t know/Refused’ to the question on Current/Future Spending are dropped from the estimation sample.

Table F3: Current Spending of ‘Better-off’ Current Family Finances

Regressors	Coeff.	S.E.	<i>p</i> -value	[95% C.I.]	
	Log Odds			Lower	Upper
FinStress	-0.921	0.309	0.003	-1.527	-0.315
MenStress	-1.303	0.260	0.000	-1.813	-0.793
(FinStress)*(MenStress)	-0.660	0.431	0.125	-1.504	0.184
CSI	-0.011	0.003	0.000	-0.016	-0.006
NSW metro	(omitted)				
NSW rural	-0.289	0.289	0.318	-0.855	0.278
VIC metro	0.512	0.264	0.053	-0.006	1.030
VIC rural	0.078	0.372	0.834	-0.651	0.807
QLD metro	-0.194	0.306	0.525	-0.794	0.406
QLD rural	0.138	0.335	0.681	-0.519	0.795
SA metro	-0.552	0.442	0.212	-1.419	0.315
SA metro	-0.307	0.434	0.479	-1.157	0.543
WA metro	-0.227	0.401	0.572	-1.013	0.559
WA rural	-0.616	0.303	0.042	-1.210	-0.021
TAS metro	0.012	0.422	0.978	-0.815	0.838
TAS rural	-2.427	1.841	0.188	-6.035	1.182
ACT	0.841	0.481	0.080	-0.101	1.784
Male	(omitted)				
Female	0.369	0.166	0.026	0.043	0.694
Socio-economic Index	0.001	0.001	0.512	-0.002	0.004
Unemployment Rate	-0.072	0.317	0.820	-0.693	0.549
Cash rate	2.929	1.404	0.037	0.177	5.681
Observation	653				
Log likelihood	-852.781				
Pseudo R^2	0.167				
Cut 1	-3.039	2.447		-7.835	1.756
Cut 2	-1.585	2.445		-6.376	3.206
Cut 3	-0.093	2.453		-4.901	4.715
Cut 4	1.553	2.459		-3.266	6.372

NOTE: ‘Coeff.’ denotes estimated coefficient, ‘S.E.’ denotes robust standard error. ‘C.I.’ denotes confidence interval. ‘NSW’ denotes New South Wales, ‘VIC’ Victoria, ‘QLD’ Queensland, ‘SA’ South Australia, ‘WA’ Western Australia, ‘TAS’ Tasmania, and ‘ACT’ Australian Capital Territory. Cut i , for $i = 1, 2, 3, 4$, are estimated cut points to define the changes among categories of the dependent variable. The results are based on the combined set of 3601 consumers from three survey periods in July, September, November 2020. Respondents stating ‘Don’t know/Refused’ to the question on Current/Future Spending are dropped from the estimation sample.

Table F4: Future Spending of ‘Worse-off’ Current Family Finances

Regressors	Coeff.	S.E.	<i>p</i> -value	[95% C.I.]	
	Log Odds			Lower	Upper
FinStress	0.229	0.158	0.146	-0.080	0.538
MenStress	0.105	0.249	0.674	-0.383	0.593
(FinStress)*(MenStress)	-0.253	0.381	0.506	-1.000	0.493
CSI	-0.009	0.002	0.000	-0.012	-0.006
NSW metro	(omitted)				
NSW rural	0.139	0.214	0.516	-0.280	0.558
VIC metro	-0.211	0.196	0.282	-0.596	0.174
VIC rural	0.026	0.257	0.920	-0.478	0.530
QLD metro	0.161	0.243	0.507	-0.315	0.636
QLD rural	0.132	0.243	0.586	-0.343	0.608
SA metro	0.143	0.237	0.545	-0.321	0.607
SA metro	0.640	0.282	0.024	0.086	1.193
WA metro	0.108	0.249	0.665	-0.380	0.596
WA rural	0.120	0.262	0.647	-0.394	0.634
TAS metro	0.147	0.376	0.696	-0.589	0.883
TAS rural	-0.094	0.535	0.861	-1.142	0.955
ACT	-0.282	0.390	0.469	-1.047	0.482
Male	(omitted)				
Female	0.253	0.114	0.027	0.029	0.476
Socio-economic Index	0.002	0.001	0.024	0.000	0.004
Unemployment Rate	0.207	0.229	0.365	-0.241	0.655
Cash rate	0.722	1.068	0.499	-1.371	2.815
Observation	1,075				
Log likelihood	-1554.583				
Pseudo R^2	0.020				
Cut 1	0.409	1.785		-3.090	3.908
Cut 2	2.365	1.777		-1.118	5.849
Cut 3	3.840	1.781		0.351	7.330
Cut 4	5.299	1.783		1.804	8.794

NOTE: ‘Coeff.’ denotes estimated coefficient, ‘S.E.’ denotes robust standard error. ‘C.I.’ denotes confidence interval. ‘NSW’ denotes New South Wales, ‘VIC’ Victoria, ‘QLD’ Queensland, ‘SA’ South Australia, ‘WA’ Western Australia, ‘TAS’ Tasmania, and ‘ACT’ Australian Capital Territory. Cut i , for $i = 1, 2, 3, 4$, are estimated cut points to define the changes among categories of the dependent variable. The results are based on the combined set of 3601 consumers from three survey periods in July, September, November 2020. Respondents stating ‘Don’t know/Refused’ to the question on Current/Future Spending are dropped from the estimation sample.

Table F5: Future Spending of ‘Same’ Current Family Finances

Regressors	Coeff.	S.E.	<i>p</i> -value	[95% C.I.]	
	Log Odds			Lower	Upper
FinStress	-0.260	0.237	0.271	-0.724	0.203
MenStress	-0.717	0.206	0.001	-1.120	-0.313
(FinStress)*(MenStress)	-0.687	0.435	0.115	-1.539	0.166
CSI	-0.009	0.002	0.000	-0.012	-0.005
NSW metro	(omitted)				
NSW rural	0.055	0.200	0.783	-0.337	0.447
VIC metro	0.013	0.175	0.943	-0.331	0.356
VIC rural	0.118	0.214	0.579	-0.300	0.537
QLD metro	0.259	0.189	0.170	-0.111	0.630
QLD rural	-0.066	0.202	0.743	-0.463	0.330
SA metro	0.267	0.233	0.252	-0.190	0.723
SA metro	-0.029	0.250	0.908	-0.519	0.461
WA metro	0.272	0.201	0.176	-0.122	0.666
WA rural	0.014	0.215	0.947	-0.406	0.435
TAS metro	-0.294	0.269	0.274	-0.822	0.233
TAS rural	-0.261	0.455	0.567	-1.153	0.632
ACT	-0.016	0.364	0.964	-0.730	0.697
Male	(omitted)				
Female	0.249	0.096	0.009	0.061	0.437
Socio-economic Index	0.001	0.001	0.177	0.000	0.002
Unemployment Rate	0.092	0.189	0.628	-0.279	0.462
Cash rate	1.761	0.898	0.050	0.001	3.522
Observation	1,644				
Log likelihood	-2026.408				
Pseudo R^2	0.032				
Cut 1	-2.089	1.545		-5.118	0.939
Cut 2	0.190	1.537		-2.822	3.203
Cut 3	2.520	1.538		-0.493	5.534
Cut 4	4.285	1.543		1.261	7.309

NOTE: ‘Coeff.’ denotes estimated coefficient, ‘S.E.’ denotes robust standard error. ‘C.I.’ denotes confidence interval. ‘NSW’ denotes New South Wales, ‘VIC’ Victoria, ‘QLD’ Queensland, ‘SA’ South Australia, ‘WA’ Western Australia, ‘TAS’ Tasmania, and ‘ACT’ Australian Capital Territory. Cut i , for $i = 1, 2, 3, 4$, are estimated cut points to define the changes among categories of the dependent variable. The results are based on the combined set of 3601 consumers from three survey periods in July, September, November 2020. Respondents stating ‘Don’t know/Refused’ to the question on Current/Future Spending are dropped from the estimation sample.

Table F6: Future Spending of ‘Better-off’ Current Family Finances

Regressors	Coeff.	S.E.	<i>p</i> -value	[95% C.I.]	
	Log Odds			Lower	Upper
FinStress	0.131	0.353	0.711	-0.561	0.823
MenStress	-1.211	0.274	0.000	-1.748	-0.674
(FinStress)*(MenStress)	-0.920	0.472	0.051	-1.845	0.004
CSI	-0.016	0.003	0.000	-0.021	-0.011
NSW metro	(omitted)				
NSW rural	-0.426	0.292	0.145	-0.998	0.147
VIC metro	0.231	0.261	0.376	-0.281	0.744
VIC rural	-0.506	0.380	0.183	-1.250	0.239
QLD metro	-0.246	0.364	0.499	-0.959	0.467
QLD rural	0.273	0.306	0.373	-0.327	0.873
SA metro	0.145	0.315	0.645	-0.472	0.763
SA metro	-0.339	0.419	0.418	-1.161	0.482
WA metro	-0.679	0.437	0.121	-1.536	0.178
WA rural	-0.279	0.324	0.388	-0.914	0.355
TAS metro	-0.550	0.414	0.184	-1.361	0.261
TAS rural	0.610	0.616	0.322	-0.598	1.817
ACT	-0.226	0.433	0.601	-1.075	0.622
Male	(omitted)				
Female	0.350	0.161	0.030	0.034	0.666
Socio-economic Index	-0.001	0.001	0.365	-0.004	0.001
Unemployment Rate	0.502	0.331	0.129	-0.146	1.151
Cash rate	0.891	1.333	0.504	-1.723	3.505
Observation	645				
Log likelihood	-820.754				
Pseudo R^2	0.149				
Cut 1	-2.061	2.583		-7.123	3.002
Cut 2	-0.386	2.581		-5.445	4.673
Cut 3	1.455	2.579		-3.600	6.510
Cut 4	3.117	2.575		-1.931	8.165

NOTE: ‘Coeff.’ denotes estimated coefficient, ‘S.E.’ denotes robust standard error. ‘C.I.’ denotes confidence interval. ‘NSW’ denotes New South Wales, ‘VIC’ Victoria, ‘QLD’ Queensland, ‘SA’ South Australia, ‘WA’ Western Australia, ‘TAS’ Tasmania, and ‘ACT’ Australian Capital Territory. Cut i , for $i = 1, 2, 3, 4$, are estimated cut points to define the changes among categories of the dependent variable. The results are based on the combined set of 3601 consumers from three survey periods in July, September, November 2020. Respondents stating ‘Don’t know/Refused’ to the question on Current/Future Spending are dropped from the estimation sample.

