Journal Pre-proof

Allowing early access to retirement savings: Lessons from Australia

Nathan Wang-Ly, Ben R. Newell

Please cite this article as: N. Wang-Ly and B.R. Newell, Allowing early access to retirement savings: Lessons from Australia. *Economic Analysis and Policy* (2022), doi: https://doi.org/10.1016/j.eap.2022.07.002.

This is a PDF file of an article that has undergone enhancements after acceptance, such as the addition of a cover page and metadata, and formatting for readability, but it is not yet the definitive version of record. This version will undergo additional copyediting, typesetting and review before it is published in its final form, but we are providing this version to give early visibility of the article. Please note that, during the production process, errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

1. INTRODUCTION

As the threat of the COVID-19 pandemic emerged in 2020, governments around the world shut down their economies and enforced stay-at-home orders, leaving many citizens suddenly unable to work and forced to rely upon whatever savings they had available. The need for economic support quickly became apparent, with the responsibility sitting with governments to provide financial relief to those who had been impacted by the lockdown measures. In many countries around the world, such as Australia, Chile, and the United States, governments chose to relax restrictions surrounding the early withdrawal of retirement savings. This sparked debate over whether these early withdrawal provisions were appropriate policy responses, and whether policymakers would be able to adequately balance the need to provide short-term financial relief with the long-term repercussions of depleting citizens' retirement balances (Feher & de Bidegain, 2020; Organisation for Economic Co-operation and Development, 2020).

On the one hand, retirement savings accounts in most countries are highly illiquid by design. This protects against overconsumption that might otherwise result in citizens' self-control problems or other decision-making biases (Beshears et al., 2015). By allowing the withdrawal of funds, governments ran the risk of reducing retirement saving rates that were often perceived to be inadequate (see Bosch et al., 2019; Demirgüç-Kunt et al., 2016; Ghilarducci et al., 2017) and jeopardising citizens' chances of enjoying a comfortable retirement. On the other hand, many citizens lacked a sufficient savings buffer (outside of retirement) to protect themselves against financial emergencies, like the sudden loss of income (Clark et al., 2021; Lusardi et al., 2011; Stavins, 2021). For these individuals, the ability to draw upon their retirement savings during the pandemic provided a crucial lifeline and allowed them to smooth their consumption having encountered an unexpected financial shock (Amromin & Smith, 2003).

Perhaps the more pertinent question then is not whether governments should have permitted early access to retirement savings, but instead how well these provisions were designed and implemented. Comparing the various provisions introduced by governments highlights the different approaches that could have been taken in aiming for the same outcome (for an overview, see Gentilini et al., 2021). For example, these provisions differed in whether citizens needed to meet certain criteria to be eligible to withdraw (e.g., in Australia and Mexico) and whether the withdrawal needed to eventually be repaid (e.g., in the U.S.). They also differed in how the maximum withdrawal amount was determined; for example, being based on a fixed amount (e.g., $100,000 in the U.S.), a proportion of citizens' retirement balances (e.g., up to 25 percent in Chile), or a proportion of citizens' wages (e.g., up to three months' wages and allowances in India). This heterogeneity in government responses presents a unique opportunity to examine the consequences of different policy approaches to allowing early retirement savings withdrawals.

In this paper, we focus our attention on the COVID-19 Early Release of Super (ERS) scheme introduced by the Australian government, which allowed eligible citizens to withdraw up to A$20,000 (approximately $14,400) of their retirement savings. Using data provided by a large Australian bank, we explore four key questions regarding the ERS scheme. First, what were the characteristics of individuals who withdrew from their retirement savings? Second, when and how much did they withdraw? Third, how were the withdrawn funds used? Fourth, what impact did the withdrawal have on their short-term financial wellbeing?

Our findings suggest that the ERS scheme broadly succeeded in achieving its intended purpose of providing immediate financial relief to citizens in need. We found that the scheme was primarily accessed by individuals in poorer financial circumstances, who were likely to have genuinely needed the money. Additionally, we observed that withdrawers paid down high-interest debts or saved the withdrawn funds, leading to improvements in their financial wellbeing.

Our study makes several contributions to the existing literature. Specific to the ERS scheme, we extend upon existing research in two ways. First, we examine the scheme using objective financial data—supplementing previous research findings, which have relied primarily on surveys and self-report (Australian Bureau of Statistics, 2021; Bateman et al., 2021; Warren, 2021). Second, we extend beyond how citizens used their withdrawn funds to also understand how the decision to withdraw affected their financial circumstances. More broadly, we contribute to the literature on early retirement savings withdrawal policies (e.g., Agarwal et al., 2020; Loibl et al., 2019; Lorca, 2021), providing insight into how they can be better designed in the future.

The remainder of this paper is arranged as follows. Section 2 describes the institutional background and literature which motivated this study. Sections 3 and 4 present our data and methodology. Section 5 discusses our empirical results. Section 6 discusses the implications of our findings, while Section 7 concludes.

2. BACKGROUND

2.1. Institutional context

In March 2020, the Australian government announced the COVID-19 Early Release of Super (ERS) scheme, allowing eligible citizens to withdraw up to A\$20,000 of their retirement savings across two application rounds. The first round was available from mid-April until the end of June, while the second round was available from July to December. In each round, individuals could request a withdrawal of between A\$1,000 and A\$10,000. Applications were made through an online government portal in which individuals indicated that they were experiencing financial hardship due to the pandemic.

The ERS scheme was a radical change to the historically strict retirement savings system in Australia. Unlike most other countries, saving for retirement is mandatory in Australia. Employers must regularly contribute a designated amount into their employees' retirement savings accounts—currently 10 percent on top of the employee's earnings. These compulsory contributions typically account for most of Australians' retirement savings, though individuals can also make additional voluntary contributions. The funds held in these retirement savings accounts are typically inaccessible until individuals reach their preservation age (for most, 60 years of age), except in situations of personal or financial hardship. However, even in these circumstances, individuals are required to provide extensive supporting documentation before receiving access to their retirement funds.

It is within this context that the ERS scheme generated significant public attention (e.g., Butler, 2020; Clarke & Robb, 2020; Whittaker, 2020). Questions were raised around whether allowing the early withdrawal of retirement savings was the most effective way to financially support Australian citizens in need, given other

financial support measures that were announced around the same time[1]. There were also concerns about how the scheme was implemented—particularly the limited controls put in place to validate citizens' eligibility for the scheme. Like many other countries, the Australian government outlined a set of criteria that needed to be met for citizens to be eligible to apply for a withdrawal; for example, being made redundant or having reduced work hours. However, the application form for the ERS scheme required no formal proof of eligibility—instead relying on individuals honestly self-reporting that they were experiencing financial hardship[2]. This prompted concerns that many citizens would be tempted to withdraw funds without adequately considering how it would impact their future retirement.

Having now concluded, the ERS scheme has seen nearly five million applications for withdrawals and over A$36 billion in funds released—about one percent of the total retirement funds in Australia (Australian Prudential Regulation Authority [APRA], 2021b, 2021c). This high uptake has only increased the importance of understanding who accessed the scheme, how they used it, and what impact it had on their financial circumstances at the time.

2.2. Literature review

The allowance of early retirement withdrawals has been a topic of interest for researchers and policymakers since well before the pandemic. Prior research has primarily focused on who requests early withdrawals and why. For example, Amromin and Smith (2003) examined the different circumstances in which U.S. households tended to request early withdrawals. Their findings suggested that withdrawals were often made to buffer against shock events, such as job loss or marital separation. Similar results were observed by Argento et al. (2015), who investigated early withdrawal rates during the Great Recession. Loibl et al. (2019) explored related questions in the U.K. context following recent legislative changes that gave individuals different options for drawing down their retirement savings after reaching the age of 55.

A consistent finding throughout this previous work is that early withdrawers tended to be in more vulnerable financial situations. Individuals who accessed their retirement savings early typically had fewer financial assets—both inside and outside of retirement accounts (Amromin & Smith, 2003; Argento et al., 2015; Butrica et al., 2010). Additionally, early withdrawers tended to be less formally educated (Butrica et al., 2010) and more overconfident in their financial knowledge (Lee & Hanna, 2020). This should raise concerns about whether withdrawers adequately consider the impact that accessing their savings can have on their future retirement balance—particularly given people's tendencies to be biased towards immediate outcomes

---

[1] In late March 2020, the Australian government also announced the JobKeeper Payment scheme: a temporary wage subsidy program which incentivised businesses to retain their employees during the lockdown period. Eligible employers received a fortnightly payment per employee who remained on their payroll (initially A$1,500), to be used towards employees' wages. These payments played a critical role in providing working Australians confidence that they would remain employed and continue to receive some regular income while in lockdown.
[2] However, applicants were advised that they may later be asked to provide evidence of eligibility to the Australian Taxation Office (ATO). There were also reports of the ATO investigating instances where citizens appeared to have withdrawn funds without being eligible (Roddan, 2020).

(O'Donoghue & Rabin, 1999) and to discount the growth rates of exponential functions (Stango & Zinman, 2009).

Other research has investigated how individuals use their withdrawn funds. Recent work by Agarwal et al. (2020) examined early withdrawals in Singapore, where individuals are permitted to withdraw between 10 to 30 percent of their retirement savings once they turn 55. Their study observed three main uses for funds. First, the withdrawal allowed for greater spending—especially for individuals who were liquidity constrained (defined by low bank balances). Second, many individuals took advantage of the withdrawal to pay down credit card debt, which would likely incur greater interest charges than their retirement savings would earn. Third, individuals also appeared to keep excess funds in a bank savings account as much as 12 months post-withdrawal, despite these having lower interest rates than retirement savings accounts. The authors hypothesised that withdrawers may have held onto liquid funds while waiting for opportunities to invest in stocks or housing.

Understanding the implications of allowing early access to retirement savings has only become more topical since the pandemic, following unprecedented relaxations of early withdrawal restrictions around the world. Recent research from Chile estimated that every dollar withdrawn will reduce withdrawers' monthly retirement benefits by as much as seven percent (Lorca, 2021). Despite this, other work from the U.S. suggests that allowing access to future benefits may have an overall benefit to welfare by helping individuals meet their short-term consumption needs (Catherine et al., 2020).

Whether this is true for the Australian government's ERS scheme remains to be seen. Bateman et al. (2021) examined individuals' decision to withdraw via the scheme, finding that many withdrawers made the decision in less than a week of learning about the scheme and either were unsure or did not care about the long-term impact of their withdrawal. However, their work did not extend to what happened after the withdrawal—that is, how the funds were used or whether this improved withdrawers' financial circumstances. The limited research that has investigated how ERS scheme withdrawers used their funds (ABS, 2021; Warren, 2021) has relied on survey responses, which are susceptible to demand characteristics. Respondents typically claim to have used their withdrawn funds for essential expenditures, such as household expenses and debt repayments; however, there have also been reports of withdrawers spending on discretionary items, such as gambling and alcohol (Ryan, 2020). Our study thus has the opportunity to provide unique insight into the ERS scheme in two ways. First, by providing objective data on how individuals spent their withdrawn funds, which will either corroborate or refute previous findings based on self-report. Second, by going one step further to also evaluate whether the decision to withdraw was demonstrably beneficial for individuals, at least in the short-term.

3.   DATA

The data used in our analyses were provided by Commonwealth Bank of Australia (CBA) [3]. As the largest financial institution in Australia, CBA has visibility over the financial choices and outcomes of millions of its customers.

3.1.   Early withdrawal dataset

The initial dataset provided by CBA consisted of 1.54 million incoming account transactions that had been inferred to be withdrawals made through the ERS scheme. These transactions were identified using a range of filters; for example, searching for keywords (e.g., "super", "early", "covid") and restricting to transactions with amounts between the minimum and maximum withdrawal amounts of A\$1,000 and A\$10,000.

A cursory exploration of this dataset revealed that most, if not all, transactions from the same retirement plan provider (known as 'superannuation funds' in Australia) shared the same description. We observed a long tail when conducting a frequency count of unique transaction descriptions, indicating the likely presence of false positives (e.g., transactions between two individuals that had incidentally contained the word "super" in the transfer description). To avoid erroneously classifying these transactions as withdrawals, we filtered the dataset to the fifty most common transaction descriptions. This accounted for 93 percent (1.43 million transactions) of the original dataset.

The retirement plan providers associated with these descriptions mapped closely to government-published data on the size of Australian superannuation funds (APRA, 2021a). This gave us confidence in our filtered dataset being an accurate representation of ERS scheme withdrawals. As an added precaution, we also applied several further exclusions based on constraints of the ERS scheme. For example, we excluded cases where an individual received payments on multiple occasions from the same plan provider into an account that they solely owned. This should not be possible given the ERS scheme only permitted one application per round. Instead, it was more likely to indicate the receipt of a regular pension or annuity payment. Following these exclusions, our final dataset consisted of 1.37 million transactions belonging to 1.04 million unique individuals.
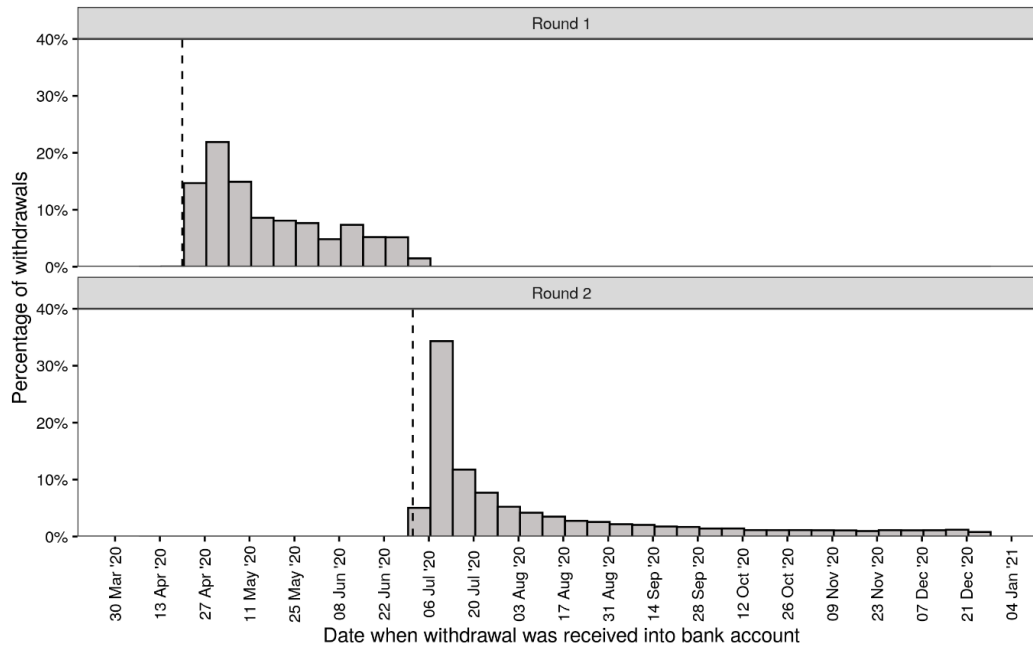
3.1.1.   Withdrawal timings

As the turnaround time for processing ERS scheme applications and making payments was short (on average, 3.3 business days; APRA, 2021b), we used the date in which individuals received their withdrawal to proxy for the date of their application. About 60 percent of these transactions were withdrawals made during the first round of the ERS scheme (between April and June 2020), while the remaining 40 percent were made during the second round (between July and December 2020).

---

[3] Data were anonymised prior to usage but included unique customer identifiers to link individuals across datasets.

Figure 1 shows the distribution of dates when the ERS scheme withdrawals were received. In both rounds, we observed that the number of withdrawals peaked immediately after the application process opened—consistent with government-published reports on the scheme (APRA, 2021b). Although the first round of the scheme spanned a month and a half, over one-third (37 percent) of the withdrawals we observed were made within the first two weeks. A similar proportion (40 percent) of withdrawals were made within the first two weeks of the second round, despite individuals having six months to apply.
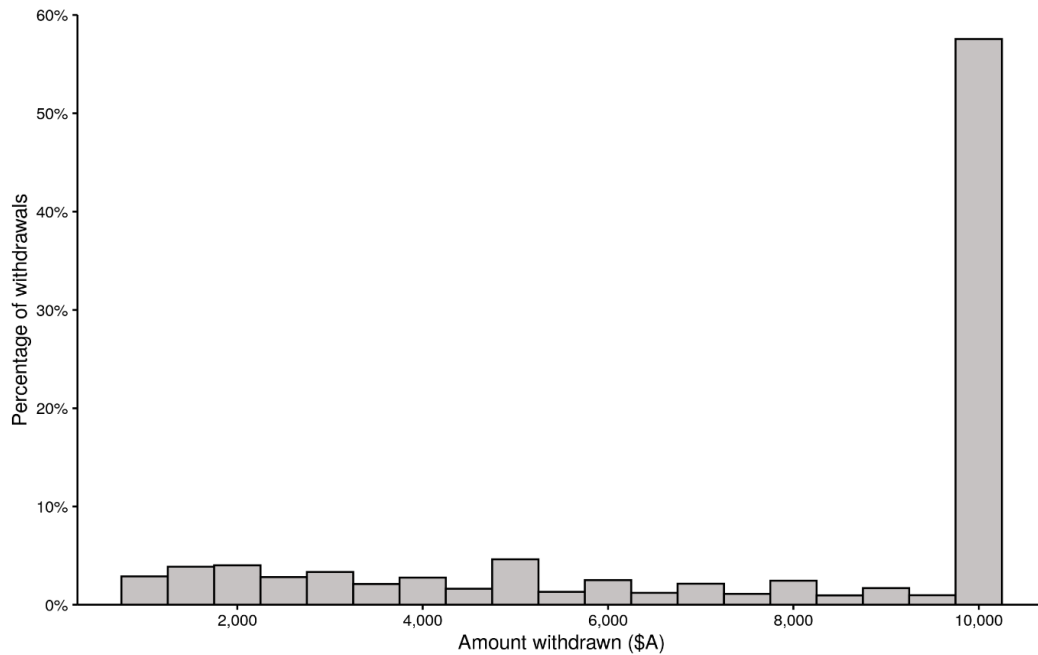

Figure 1. Distribution of Withdrawal Timings Across ERS Scheme Rounds.
Note: Dashed lines indicate start date for each application round.

3.1.2. *Withdrawal amounts*

Across both rounds, we observed that almost 60 percent of withdrawals took out the maximum A$10,000 permitted (Figure 2). In line with previous findings (Bateman et al., 2021), the median withdrawal amount was therefore A$10,000. The mean withdrawal amount was A$7,621—again consistent with government data, which reported an average withdrawal amount of A$7,569 across all ERS scheme withdrawals (APRA, 2021b).

Figure 2. Distribution of Withdrawal Amounts Across ERS Scheme Rounds.

Note: Minimum permitted withdrawal was A\$1,000 and maximum was A\$10,000.

3.2. Demographic and financial characteristics

In addition to the early withdrawal dataset, CBA also provided individual-level demographic and financial data of its customers. Demographic characteristics (e.g., age, tenure with CBA) were provided as of March 2020—just prior to the ERS scheme becoming available. Financial characteristics, such as types of financial products held (e.g., savings accounts, credit cards) and account balances, were provided on a monthly basis between October 2019 (six months prior to the ERS scheme) until December 2020 (six months after the end of the first round of the ERS scheme).

4. METHODOLOGY

In this section, we describe two sets of analyses we conducted to investigate the research questions outlined at the start of the paper. Our first analysis sought to explore potential differences in the characteristics of individuals who chose to withdraw via the ERS scheme by comparing a subset of withdrawers identified through the early withdrawal dataset ('Withdrawer sample') with a representative sample of CBA customers ('Representative sample'). Our second analysis aimed to examine the consequences of withdrawing by comparing a further filtered subset of withdrawers to a matched sample of individuals who did not withdraw ('non-withdrawers'). For each analysis, we first describe our approach to deriving the samples of individuals used in the comparisons, before elaborating on our methodology.

4.1. Examining characteristics of withdrawers

4.1.1. Sampling approach

After our initial filtering of the early withdrawal dataset provided by CBA, there were 1.04 million individuals who were identified as having withdrawn via the ERS scheme. We narrowed our focus to the 810,275 individuals (about 80 percent of the initial sample) who had withdrawn in the first round of the scheme, regardless of whether they had withdrawn in the second. We did so because our interest was in examining individuals' financial data in the six months prior to the ERS scheme's announcement (i.e., between October 2019 and March 2020). We viewed this as an indication of individuals' financial circumstances prior to the pandemic and in the lead up to their decision to withdraw.

Of these individuals, we excluded those with missing demographic characteristics or who were listed as residing outside of Australia (26,679 individuals). We also restricted our sample to individuals for whom CBA was likely to be their main financial institution ('MFI customers')[4] during the six-month observation period. Applying this restriction yielded two benefits. First, it reduced the likelihood that the data we analysed were incomplete due to individuals conducting their primary banking activities elsewhere. Second, it allowed us to track these individuals' 'Financial Wellbeing (FWB) scores', which CBA calculates monthly for its MFI customers. These scores are derived using the observed component of the Melbourne Institute (MI) Financial Wellbeing Scales—originally developed in Comerton-Forde et al. (2018) and later improved in Haisken-DeNew et al. (2019)—and provide an overall picture of individuals' financial health based on their observed bank data[5]. Applying these exclusions resulted in a final sample of 579,959 individuals—referred to as the 'Withdrawer sample'. We also randomly selected 100,000 CBA customers who met these criteria, whom we referred to as the 'Representative sample'.

4.1.2. Differences in withdrawers' demographic and financial characteristics

We compared our Withdrawer and Representative samples across a range of demographic and financial characteristics, such as age, income, account balances, and arrears history. As mentioned previously, these comparisons were made for the six months prior to the ERS scheme's announcement—between October 2019 and March 2020. Welch t-tests were used to compare continuous data and two-proportion z-tests were used to compare binary data.

---

[4] CBA internally classifies its customers as being 'MFI customers' based on their observed financial activity (e.g., frequency of incoming and outgoing transactions).
[5] The MI Financial Wellbeing Scales use individuals' bank data to calculate monthly scores across five components: how often individuals experience payment problems, have low liquid balances, have high expenditure, can cover their expenses, as well as how their savings balances compare to others of the same age. This extends beyond previous measures that have focused on self-reported perceptions around financial wellbeing (e.g., Netemeyer et al., 2018; Prawitz et al., 2006), instead conceptualising financial wellbeing as being a combination of subjective and objective elements (Brüggen et al., 2017; Consumer Financial Protection Bureau, 2017; Muir et al., 2017). While previous work has considered objective indicators of financial wellbeing (e.g., Greninger, 1996), the scales make the first attempt to develop an overarching measure of financial wellbeing using only objective data.

4.2. Examining consequences of withdrawing

4.2.1. Sampling approach

For our matching analysis, we considered income to be a key predictor in individuals' decision to withdraw via the ERS scheme—and therefore an important variable to match on. Thus, we chose to exclude individuals from our Withdrawer sample for whom we did not observe income in the six months prior to their withdrawal. In doing so, we hoped to reduce the likelihood that individuals in our sample were receiving income into accounts at other financial institutions, which we would not have visibility over. Applying this exclusion lowered our sample from 579,959 individuals (our Withdrawer sample from the earlier analysis) to 393,088 individuals.

To identify suitable matches for these individuals, we first created a pool of two million randomly selected CBA customers for whom we had not observed an ERS scheme withdrawal. We then applied the same exclusions described previously in Section 4.1.1 (e.g., restricting the sample to MFI customers), which left about 1.1 million potential matches. From this pool, we conducted our matching procedure to identify 393,088 'non-withdrawers'—individuals who had not withdrawn via the ERS scheme, but who shared similar demographic and financial characteristics to those who had.

4.2.2. Propensity score matching

To explore the consequences of withdrawing via the ERS scheme, we used propensity score matching (PSM) (Rosenbaum & Rubin, 1983b), which has been widely used to estimate causal effects in non-experimental settings (e.g., Dehejia & Wahba, 2002; Wu et al., 2008). One of the benefits of PSM over other matching approaches is that it does not suffer from the 'curse of dimensionality', whereby the effectiveness of matching is reduced with large numbers of matching covariates (Zhao, 2008)[6].

The first step in our matching procedure was to select a set of covariates that were expected to have an influence on individuals' likelihood of treatment (in our case, the decision to withdraw) and our outcomes of interest. A previous survey had found that the most commonly reported motivations for withdrawing were financial: loss of income, needing to pay immediate expenses, or taking precautions to cover future bills (Bateman et al., 2021). Thus, we sought to match individuals on their financial positions prior to the ERS scheme, as observed through CBA data. We included indicators such as individuals' income, their account balances, and their history of being in arrears (see Table 1 for the full list of matching covariates and their definitions).

---

[6] However, see King & Nielsen (2019) for limitations of the PSM approach.

Table 1.

List of covariates used in propensity score matching procedure.

Covariate	Definition
Age	Age (in years).
Gender	Reported gender.
Tenure	Tenure (in years) with bank.
State	Reported state or territory of residence.
Financial Wellbeing scores • Overall score • Low Balance score • Expenses Covered score • Relative Savings score • Payment Problems score • Net Spending score	Mean MI Financial Wellbeing Scales scores during observation period. See Comerton-Forde et al. (2018) and Haisken-DeNew et al. (2019) for further detail on how the overall and component scores are calculated.
Income • Months 1-3 • Months 4-6	Mean estimated monthly income during observation period. Divided into the first three months prior to withdrawal (Months 1-3) and the three months before that (Months 4-6).
Product holdings • Transaction account • Savings account • Debit card • Credit card • Personal loan • Home loan	Binary flag (1 = Yes) indicating whether customer held each product type at any point during observation period.
Account balances • Transaction account • Savings account • Debit card • Credit card • Personal loan • Home loan	Mean total balance across each product type during observation period.
Arrears • Transaction account • Savings account • Debit card • Credit card • Personal loan • Home loan	Binary flag (1 = Yes) indicating whether customer had been in arrears for >7 days consecutively on each product type at any point during observation period.

Deferrals
    • Credit card
    • Personal loan
    • Home loan
	Binary flag (1 = Yes) indicating whether customer had requested a deferral on each product type at any point during observation period.

Card spend
    • Debit card
    • Credit card
	Mean monthly spend across each card type during observation period.

Repayments
    • Credit card
    • Personal loan
    • Home loan
	Mean total monthly repayments made for each product type during observation period.

Note. Observation period refers to the six months prior to individuals' withdrawal period.

As described above, our sample of withdrawers consisted of 393,088 individuals. We divided these individuals into three subsets based on which month they had received their ERS withdrawal: April (110,411 individuals), May (184,028 individuals), and June (98,649 individuals). For each subset, we observed the individuals over the six months prior to their respective withdrawal month (e.g., between December 2019 and May 2020 for June withdrawers).

We then sought to identify suitable matches for these withdrawers from our pool of 1.1 million non-withdrawers. Naturally, because these non-withdrawers had not received any funds via the ERS scheme, we could not separate them into subsets as we had done for the withdrawers. Instead, we created three datasets using the same pool of individuals. The first dataset observed the characteristics of these individuals between October 2019 and March 2020, allowing us to identify suitable matches for our April withdrawers. Likewise, we observed the same individuals between November 2019 and April 2020 to identify matches for our May withdrawers, as well as between December 2019 and May 2020 to identify matches for our June withdrawers.

We thus conducted our matching exercise thrice—once for each subset of withdrawers with the corresponding pool of non-withdrawers. We implemented 1:1 nearest neighbours matching without replacement using *R 4.0.2* (R Core Team, 2020) with the *MatchIt* package (v3.0.2; Ho et al., 2011). This resulted in matched samples for April (220,822 individuals), May (368,056 individuals), and June (197,298 individuals).

4.2.3. *Quality of matching*

Figure 3 shows the distribution of propensity scores between the April, May, and June subsets before and after conducting our matching procedure. A visual inspection of the data revealed that the distributions overlapped completely after matching. This indicated that there was a clear region of common support (Lechner, 2008) and that subsequent analyses would be examining comparable individuals (Dehejia & Wahba, 1999).
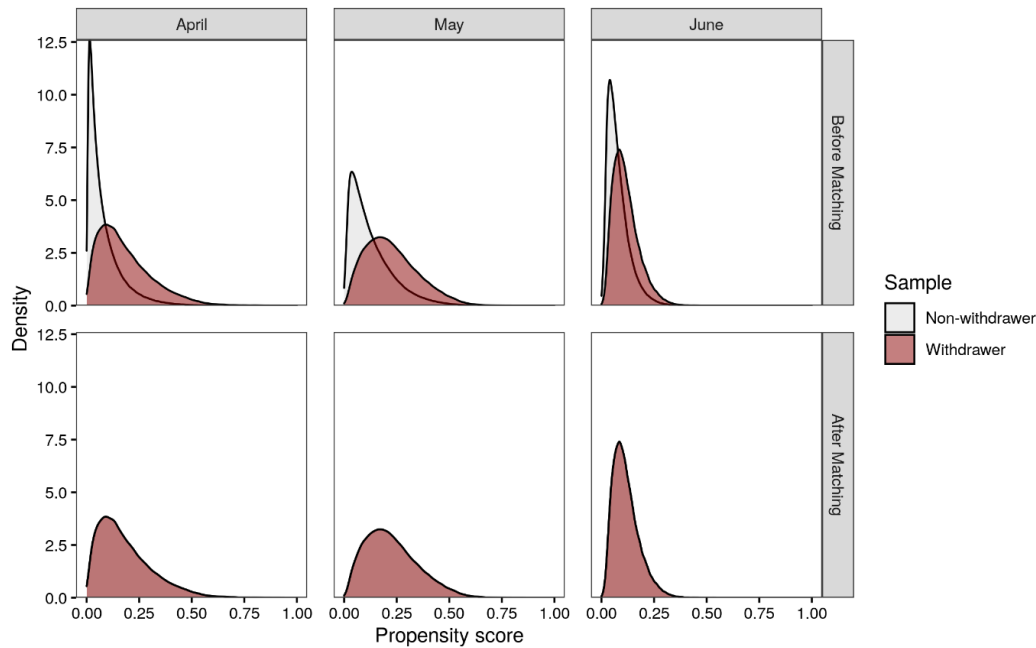
Figure 3. Propensity Score Distributions of Customers Who Withdrew Using ERS Scheme (Withdrawers) and Matched Customers Who Did Not (Non-Withdrawers) Before and After Matching.

We next assessed balance on our matching covariates using R 4.0.2 (R Core Team, 2020) with the *cobalt* package (v4.2.3; Greifer, 2020). Appendix Table A5 reports the absolute standardised mean differences (ASMD) for each covariate, as well as the variance ratios for continuous variables. We labelled covariates as balanced where the ASMD was below 0.1 and the variance ratio was between 0.5 and 2 (Austin, 2009; Rubin, 2001). Across all three matched datasets, we observed only two potential instances of imbalance. For the May and June subsets, the covariate estimating individuals' income four to six months prior to withdrawing returned variance ratios of 0.47 and 0.46 respectively—only slightly outside the recommended thresholds. All other covariates were balanced in terms of both ASMD and variance ratios. As an additional check, we assessed the balance of our matched samples in the six months prior to the observation period that were used to determine the matches (i.e., month 7 to 12 prior to withdrawal) (Appendix Table A6). These tests also indicated high levels of balance, giving further confidence in our datasets being well matched and suitable for analysis.

4.2.4. Post-matching regressions

Once satisfied with our matched samples, we proceeded to compare withdrawers and non-withdrawers in their subsequent financial behaviour and outcomes. We examined three ways individuals may have used their withdrawn funds: spending, repaying personal debts, or saving. We also examined two ways in which individuals may have benefited from having access to the withdrawn funds: avoiding arrears and improving their overall financial wellbeing (as measured via their FWB scores). For each outcome, we tracked individuals

over the six months following the withdrawal period. We separated these six months into two three-month periods ('Months 1 to 3' and 'Months 4 to 6') to observe the immediate and longer-term consequences of withdrawing.

Differences in outcomes were analysed using OLS regression (for continuous outcomes) and logistic regression (for binary outcomes). We controlled for the same covariates used during the matching process (Table 1) and clustered standard errors at the matched pair level (Abadie & Spiess, 2021). Although we ran separate regressions for each of the April, May, and June matched samples, we found that for most of the outcomes analysed, the estimates were directionally consistent and varied only in their magnitude. Thus, to simplify our results, we report a single estimate per outcome based on a weighted average of the significant effects (at the .05 level or lower) yielded by our three regressions (however, see Appendix Tables B1 to B5 for the individual regression results).

4.2.5. Sensitivity analyses

For any analysis that involves matching, a key assumption is that of strongly ignorable treatment assignment: each outcome analysed should be independent of treatment assignment after conditioning on the covariates used for matching (Rosenbaum & Rubin, 1983b). In the context of our analysis, this required the assumption that there was not an unobserved covariate that could influence the assignment of treatment (i.e., individuals' decision to withdraw from their retirement savings) and our outcomes of interest (e.g., subsequent debt balances). To address concerns about potentially unobserved covariates, it is often recommended that sensitivity analyses are conducted to help assess the robustness of reported results (e.g., Rosenbaum & Rubin, 1983a; Stuart, 2010). We conducted these analyses for continuous outcomes using the *sensemakr* package (v0.1.3; Cinelli, Ferwerda, & Hazlett, 2020) in *R 4.0.2* (R Core Team, 2020) (Appendix Table A7). We report the partial R^2 values, which estimate how strongly an unobserved covariate must influence both treatment assignment and each outcome of interest to render our effects non-significant (Cinelli & Hazlett, 2020).

5. RESULTS

5.1. Characteristics of withdrawers

Due to the large sizes of our samples, nearly all comparisons between our Withdrawer and Representative samples yielded statistically significant effects (at the .001 level). We thus focus on the differences we considered most relevant in characterising the types of individuals who chose to withdraw via the ERS scheme (however, see Appendix Tables A1-A4 for a comprehensive view of our comparisons).

5.1.1. Demographic characteristics

On average, individuals in the Withdrawer sample were younger compared to those in the Representative sample (34 years vs 37 years; $p < .001$). Although the difference in mean ages was relatively small, the

distribution of ages was noticeably different. Over 43 percent of withdrawers fell within the 26 to 35 age band, whereas only 33 percent did in our representative cohort (Figure 4).
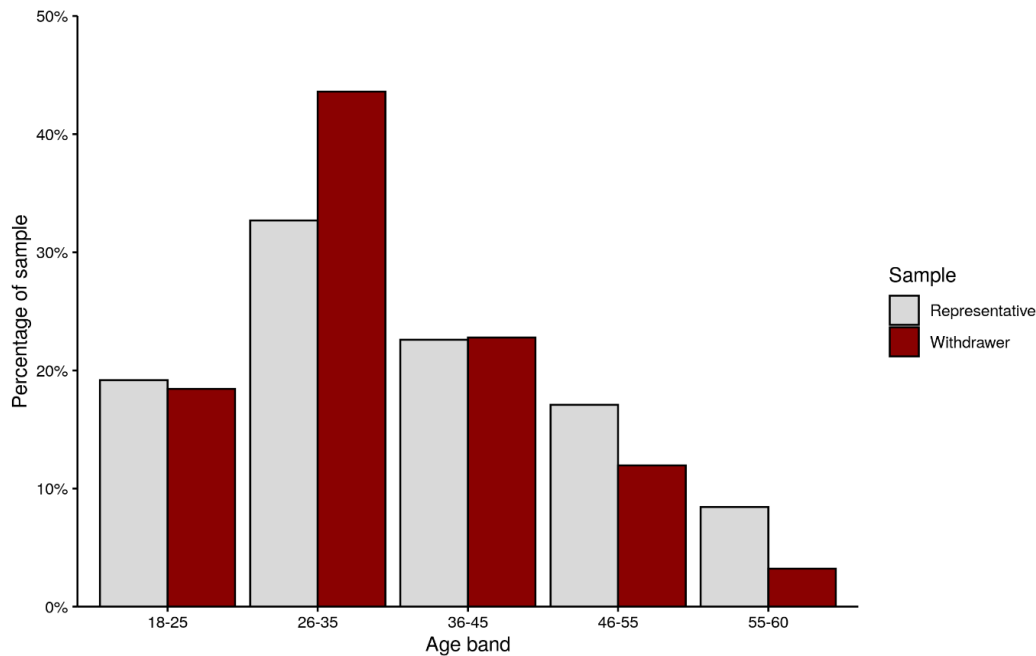
Figure 4. Comparison of Customers Who Withdrew Using ERS Scheme (Withdrawers) And Representative Sample of Bank Customers (Representative) by Age Band.

Of the individuals for whom we could estimate an income[7], we also observed that withdrawers tended to earn less—even after controlling for their younger age ($p < .001$). About three-fifths (63 percent) of individuals in the Withdrawer sample earned an estimated net annual income between A\$20,000 and A\$60,000, compared to about half (55 percent) of those in the Representative sample (Figure 5). In contrast, withdrawers were less likely than their representative counterparts to have incomes above A\$60,000 (17 percent vs 26 percent).

---

[7] Individuals' net annual income was estimated by annualising salary transactions and other identified income streams deposited into their bank accounts over the six-month observation period.
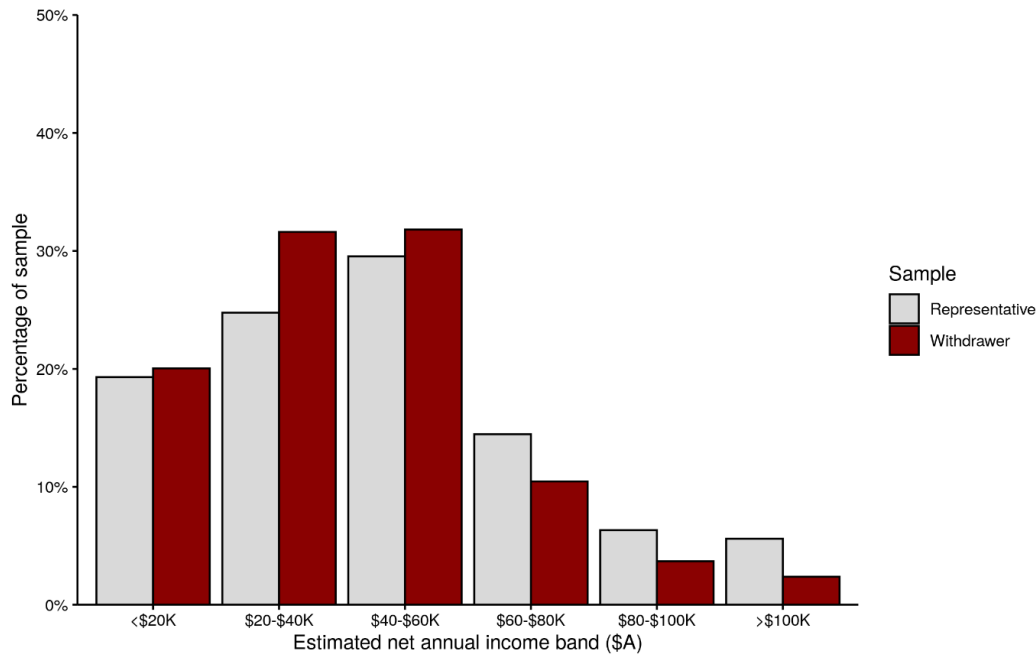
Figure 5. Comparison of Customers Who Withdrew Using ERS Scheme (Withdrawers) And Representative Sample of Bank Customers (Representative) by Income Band.

5.1.2. Account balances

We next examined individuals' account balances across five product types: transaction (checking) accounts, savings accounts, credit cards, personal loans, and home loans. We calculated their average balance across the six-month observation period and compared this between our Withdrawer and Representative samples (conditional on individuals holding each product type).

   Our comparisons indicated that individuals in our Withdrawer sample had lower median transaction account balances (A$618.23 vs A$986.18) and savings account balances (A$482.40 vs A$1,285.26) than those in our Representative sample. In addition to having lower liquid balances, withdrawers also tended to have higher short-term debt balances. The median balance owed for our Withdrawer sample was about 7 percent higher for credit cards (A$2,223.29 vs A$2,068.74) and about 10 percent higher for personal loans (A$10,709.43 vs A$9,717.03). These differences were similarly observed at the mean-level (p's < .001) and persisted after controlling for age differences.

5.1.3. History of arrears

Conditional on holding each product type described in the previous section, we also calculated the proportion of individuals who had been in arrears in the six months prior to the introduction of the ERS scheme. For debit accounts (transaction and savings accounts), we classified individuals as being in arrears if their balance

remained negative for seven or more consecutive days. For credit accounts (credit cards, personal loans, and home loans), individuals were considered to be in arrears if they failed to meet their repayment obligations for at least seven consecutive days. Across all product types except for savings accounts, we observed that individuals in our Withdrawer sample were more likely to have been in arrears than those in our Representative sample (p's < .001). In the case of credit cards and home loans, arrears rates were about twice as high for withdrawers (9.7 percent vs 5.8 percent for credit cards; 8.2 percent vs 3.4 percent for home loans).

5.1.4. Financial Wellbeing scores

Finally, we examined individuals' average observed Financial Wellbeing (FWB) scores, derived using the MI Financial Wellbeing Scales (Haisken-DeNew et al., 2019). Withdrawers scored lower than our representative sample across all five items: experience of payment problems, having low liquid balances, having high expenditure, being unable to cover expenses, and having low savings balances relative to others of the same age (p's < .001). As a result, our Withdrawer sample had a significantly lower combined FWB score of 33.84 (out of 100) compared to 45.27 for the Representative sample (p < .001). Based on the qualitative labels described in Haisken-DeNew et al. (2019), over three-quarters (77 percent) of withdrawers were either 'Having Trouble' or 'Just Coping' (Figure 6). In contrast, about 60 percent of individuals in the representative cohort fell within these categories.
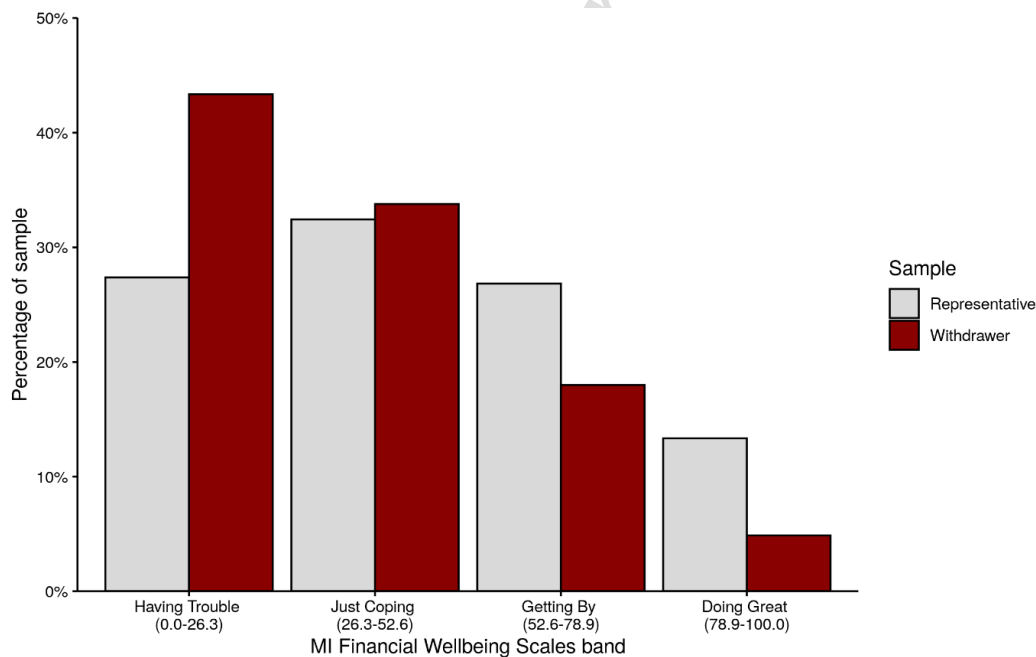

Figure 6. Comparison of Customers Who Withdrew Using ERS Scheme (Withdrawers) And Representative Sample of Bank Customers (Representative) by MI Financial Wellbeing Scales Band.

Note: Ranges indicate the overall scores from the MI Financial Wellbeing Scales which fall within each band.

5.2.   Consequences of withdrawing

5.2.1.   Card spend

We first analysed the mean amount individuals spent per month on their debit cards, conditional on holding that product throughout our six-month post-withdrawal observation period. As shown in Figure 7, individuals who did and did not withdraw averaged similar levels of spend in the months prior to the withdrawal. However, debit card spend in the months that followed increased sharply for withdrawers relative to non-withdrawers. Our regression estimates indicated that withdrawers spent an average of A$330.87 more per month in Months 1 to 3 (p's < .001). This increase persisted in Months 4 to 6, but to a lesser degree (A$125.71 per month) ($p$'s < .001). We observed a similar pattern for credit cards; withdrawers exhibited higher spending than non-withdrawers in Months 1 to 3 (A$117.26 per month) ($p$'s < .001), which tapered off during Months 4 to 6 (A$13.09 per month) ($p$'s < .01, except for the June matched sample).
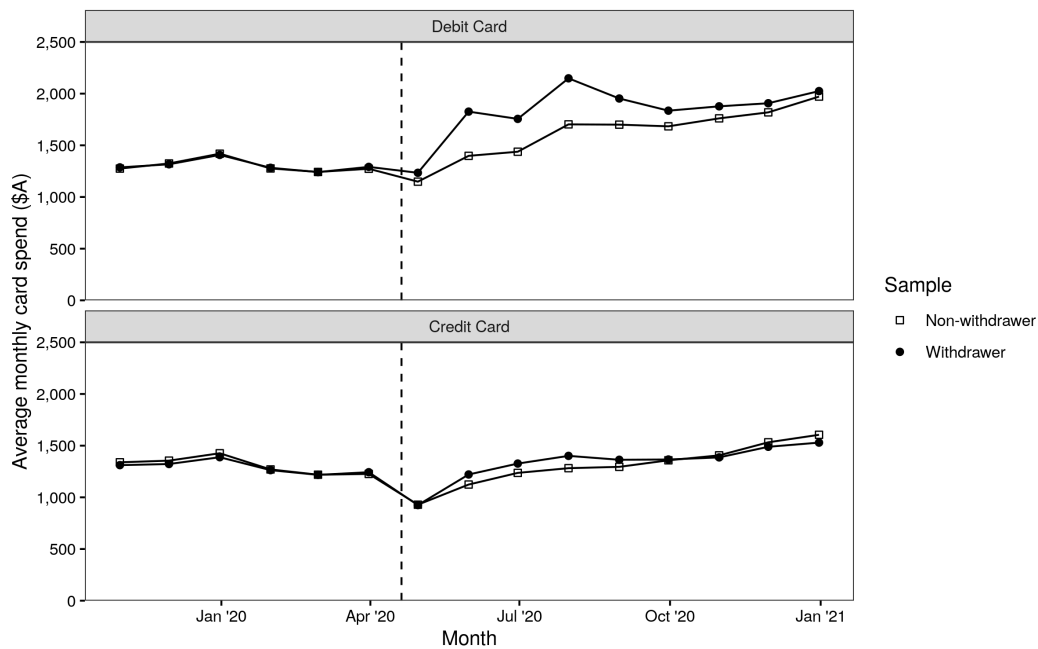
Figure 7. Average Debit and Credit Card Spend for Customers Who Withdrew Using ERS Scheme (Withdrawers) and Matched Customers Who Did Not (Non-Withdrawers).
Note: Dashed line indicates start of ERS scheme.

We also analysed individuals' expenditure at a more granular level, using spending categories assigned by CBA. These include categories such as Eating Out, Groceries, Shopping, and more. Considering that most individuals had reported using the withdrawn funds to pay for their mortgage, rent, or household expenses (ABS, 2021), we expected to observe the greatest differences in spending in essential categories, such as Groceries and Utilities. However, we found that this was not the case. During Months 1 to 3, the average withdrawer spent 7 percent (A$18.68) more per month on Groceries purchases and 12 percent (A$16.74) more

per month on Utilities purchases than the average non-withdrawer. However, they also spent 16 percent (A\$76.55) and 20 percent (A\$34.98) more each month on Shopping and Entertainment purchases respectively. These purchases might include those made in physical or online stores (e.g., clothing, cosmetics, or electronics), purchases of digital goods (e.g., media streaming services), as well as online gambling.

5.2.2. Debt balances

We next examined individuals' account balances across their debt products with the bank: credit cards, personal loans, and home loans. This allowed us to gauge the extent to which withdrawn funds had been used to make personal debt repayments. For each of these debt products, we observed individuals' account balance (or total balance if they held multiple accounts) at the third and sixth month after withdrawal—again conditional on their holding the product during the observation period. Our regressions indicated that withdrawers had lower average credit card balances than non-withdrawers by A\$436.97 and A\$301.46 after three and six months respectively (p's < .001). Likewise, their average personal loan balances at three and six months were lower by A\$430.56 and A\$350.62 (p's < .001). In contrast, we did not observe any differences in home loan balances for either period (p's > .05).

5.2.3. Liquid savings

We similarly examined account balances across transaction and savings accounts, which indicate the amount of liquid funds individuals had available. On average, individuals who withdrew had higher balances in their transaction accounts by A\$825.85 after three months (p's < .001, except for the April matched sample) and A\$247.89 after six months (p's < .001). We also observed higher savings account balances by A\$2,041.01 and A\$1,127.95 after three and six months respectively (p's < .001) (Figure 8).
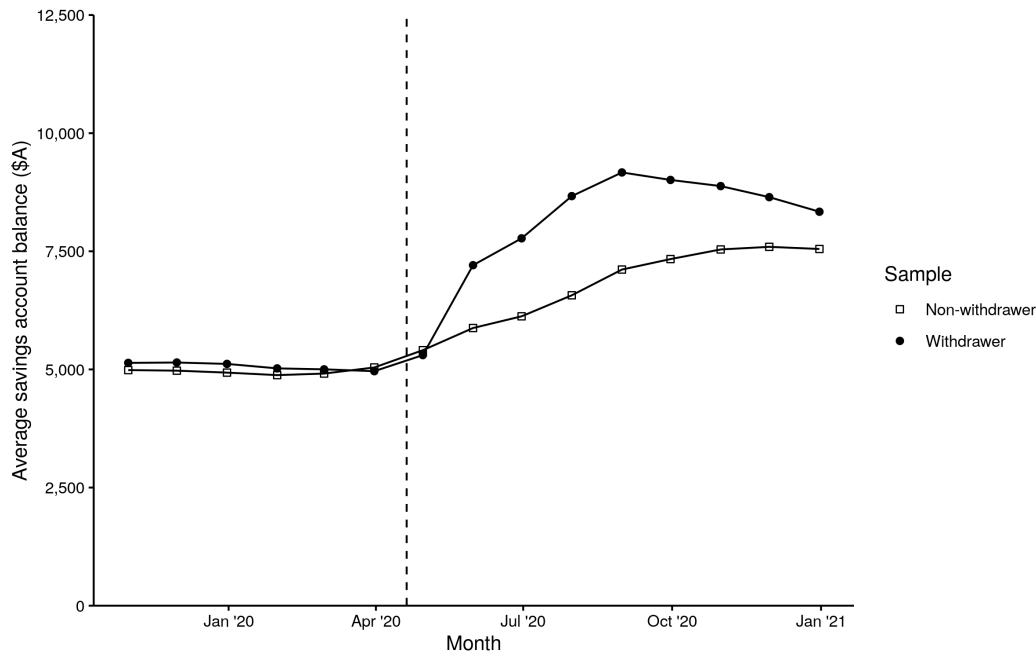
Figure 8. Average Savings Balances for Customers Who Withdrew Using ERS Scheme (Withdrawers) and Matched Customers Who Did Not (Non-Withdrawers).

Note: Dashed line indicates start of ERS scheme.

5.2.4.   Arrears

Moving on from how individuals used their withdrawn funds, we examined whether the decision to withdraw had a positive impact on their financial outcomes. We first considered whether individuals had been in arrears during the first three months (Months 1 to 3) and subsequent three months (Months 4 to 6) after withdrawing. Individuals were classified as being in arrears if they had a negative balance (for transaction accounts) or were late on their repayments (for credit cards, personal loans, or home loans) for seven or more days at any point during our observation periods. To contextualise our findings, we describe the marginal effect estimates calculated using the *mfx* package (v1.2-2; Fernihough, 2019) in *R 4.0.2* (R Core Team, 2020) (however, see Appendix Table B4 for the standard logistic regression estimates).

For Months 1 to 3, our analyses suggested that individuals who withdrew from their retirement savings were less likely to fall into arrears than those who did not. Our estimates indicated that withdrawers were 0.08 percentage points (pp) less likely to be in arrears than non-withdrawers on their transaction accounts (p's < .001, except for the April matched sample). We similarly observed decreased arrears rates in withdrawers for credit cards (-0.16pp) (p's < .001), personal loans (-0.05pp) (p's < .001), as well as for home loans (-0.10pp) (p < .01 for the May matched sample only)[8]. During Months 4 to 6, we observed the opposite trend. Compared to non-

---

[8] Although these effect sizes are small in terms of magnitude, they represent meaningful differences in relative terms. For example, arrears rates for credit cards and home loans were about two and three percent respectively

withdrawers, individuals who withdrew were more likely to be in arrears on their transaction accounts (0.10pp) (p's < .01) and personal loans (0.13pp) (p's < .01, except for the May matched sample). However, we observed no difference in arrears rates during this period for credit cards or home loans (p's > .05).

5.2.5.   Financial Wellbeing scores

As our final outcome, we compared individuals' Financial Wellbeing (FWB) scores during the post-withdrawal period (Figure 8), as measured using the MI Financial Wellbeing Scales (Haisken-DeNew et al., 2019). Our comparisons indicated that withdrawers had higher FWB scores than non-withdrawers after three months by 1.85 points (out of 100) (p's < .001). This difference grew slightly at the six-month mark, where the relative increase in FWB scores for withdrawers was 2.18 points (p's < .001).
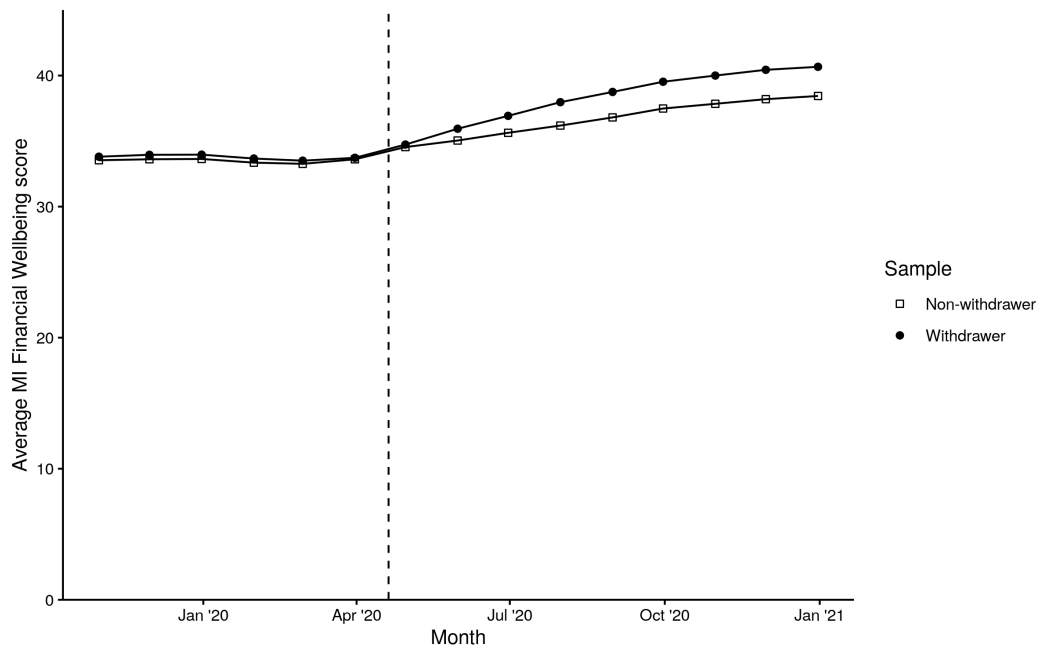
Figure 8. Average MI Financial Wellbeing Scales Scores for Customers Who Withdrew Using ERS Scheme (Withdrawers) and Matched Customers Who Did Not (Non-Withdrawers).

Note: Dashed line indicates start of ERS scheme.

---

during the first three months post-withdrawal. Thus, our estimated effects (-0.16pp and -0.10pp) indicate that withdrawers were about five percent less likely to experience arrears on these products compared to non-withdrawers.

5.2.6.   Sensitivity analyses

Our sensitivity analyses suggested that most of our findings were highly robust (see Appendix Table A7). For example, our most robust result was the significant increase in debit card spending observed in our April matched sample, with a partial R^2 of 0.13. This indicates that an unobserved covariate would have to account for 13 percent of the residual variance in both the treatment assignment (i.e., decision to withdraw via the ERS scheme) and the outcome to explain away the effect. Although it is possible for such a covariate to exist, it is unlikely; for reference, we found that our chosen set of matching covariates explained a combined 10 percent of variance in whether individuals withdrew via the ERS scheme. However, it should also be acknowledged that several of our statistically significant results were less robust (e.g., monthly credit card spend in Months 4 to 6 for our May and June matched samples), which suggests that greater caution should be taken in their interpretation.

6.   DISCUSSION

This study set out to examine the impacts of the Australian government allowing citizens early access to their retirement savings through the Early Release of Super scheme. Our findings can be summarised under three key insights. First, individuals typically applied to access their funds as soon as the scheme became available—with most withdrawing the maximum A$10,000 per round that was permitted. On the one hand, this could reflect how urgently citizens required financial support once the lockdown measures were implemented[9]. On the other hand, this could also be interpreted as evidence that individuals were withdrawing via the scheme without adequately considering how this would impact their future retirement balance. However, as our data do not allow us to discern between these potential interpretations, we refrain from speculating further.

Second, compared to a representative sample of Australians, our sample of withdrawers were younger, earned less income, held fewer savings and more debt, and were more likely to have recently experienced arrears. These are characteristics that have been found to be associated with financial vulnerability (Hoffmann & McNair, 2019) and, in line with previous work (Amromin & Smith, 2003; Argento et al., 2015; Butrica et al., 2010), suggest that the scheme was accessed by individuals in poorer financial circumstances prior to the pandemic. From a policymaking perspective, this could be viewed as a reassuring outcome; despite concerns about the limited controls in place to validate eligibility in the application process, the scheme appears to have been primarily accessed by individuals who genuinely needed financial support. At the same time, our findings should raise concerns about whether the scheme may further entrench individuals who were financially vulnerable to begin with (Hoffmann et al., 2021).

Third, the withdrawn funds appeared to have had a net positive impact on individuals' financial wellbeing in the short-term. Consistent with Agarwal et al. (2020), withdrawers tended to increase their spending, pay down high-interest debts (credit cards and personal loans), and held additional funds in their

---

[9] A survey conducted prior to the pandemic found that about half of Australian households had less than A$10,000 in savings and about one-fifth of households would struggle to raise money to cover a A$3,000 emergency (Members Equity Bank, 2020).

savings accounts[10]. We also observed that withdrawers were then less likely to experience arrears (at least in the initial months after withdrawing[11]) and had higher overall financial wellbeing, as measured using the MI Financial Wellbeing Scales. This suggests that the provision of early access to retirement savings succeeded in helping citizens to meet their short-term consumption needs and financial obligations—though whether these justify the potential longer-term consequences remains to be seen.

Overall, our analyses indicate that the ERS scheme achieved its intended purpose: it provided many Australians in need with a financial lifeline and helped buoy them during uncertain and turbulent times. At the same time, our findings suggest several potential policy considerations for future governments looking to allow the early access of retirement funds. For example, the fact that over half of withdrawals applied for the maximum of A\$10,000 highlights the importance for governments to carefully consider how withdrawal limits are set. While these withdrawals could simply reflect the true amount of money individuals needed to financial sustain themselves, it may have been the case that many citizens were unsure of how much to withdraw—not knowing how long the pandemic would continue for. Thus, they may have either anchored to the maximum limit set by the government (Kahneman & Tversky, 1974) or considered it to be an implicit recommendation (Krijnen et al., 2017). Future governments may want to explore ways to discourage citizens from withdrawing the maximum permitted amount if it exceeds how much they are likely to need. For example, governments could provide projections which estimate the impact of withdrawing on prospective withdrawers' future retirement balance, thereby helping them to accurately weigh up the benefits of having the funds today against the future reduction in their balance.

Another consideration for governments is how to best support individuals after they have decided to access their retirement savings early. Our analyses indicated that a large proportion of ERS scheme withdrawers were young—with over half under the age of 35. For these individuals, retirement is likely to be thirty or more years away, in which case the estimated impact of a A\$10,000 withdrawal could mean as much as \$43,000 at retirement (assuming an average growth rate of 5 percent). As this could drastically affect withdrawers' quality of life when retired, governments may want to consider ways to encourage re-contribution of withdrawn funds. For example, the Australian government has already introduced tax concessions for withdrawers who contribute funds back into their retirement savings accounts. In Australia, citizens normally receive tax benefits for making voluntary contributions (on top of their compulsory employer contributions) up to an annual cap. The recent legislation gives withdrawers until 2030 to re-contribute their withdrawn funds without these counting towards the annual cap. Alternatively, governments may instead mandate that the withdrawn funds must be repaid over time, as was the case with the early withdrawal provisions implemented by the U.S. government.

Outside of the government, retirement plan providers may also have a role to play in encouraging withdrawers to replenish their retirement savings. These providers have visibility over which of their members

---

[10] In a follow-up analysis, we considered the possibility that withdrawers' higher liquid savings balances (relative to non-withdrawers) were due to them earning more income in the months following the ERS scheme withdrawal. However, our analysis indicated that withdrawers averaged \$375.73 less per month in income compared to non-withdrawers in the three months post-withdrawal (p's < .001) (Appendix Table B6).
[11] Our observation that withdrawers tended to have lower arrears rates during Months 1 to 3 after withdrawing, but higher arrears rates during Months 4 to 6 could suggest that the funds withdrawn via the ERS scheme helped individuals to initially avoid arrears but were inadequate to support some individuals beyond this.

withdrew and what amount was withdrawn. With this information, it would be possible to send targeted, personalised communications to those who have withdrawn. For example, these messages could compare withdrawers' projected lump sum retirement balance or equivalent annuity depending on how much they choose to contribute back into their account (see Goda et al., 2014; Goldstein et al., 2016; Smyrnis et al., 2021). Such messages may also find it effective to frame re-contributions as a way to secure withdrawers' financial comfort in retirement (Eberhardt et al., 2021).

7. CONCLUSION

The Early Release of Super scheme provides an insightful case study into the consequences of governments allowing early access to retirement savings. It also demonstrates the importance of thoughtful policy design and implementation, which can influence citizens' reactions and responses. Our findings highlight the short-term benefits to permitting the early withdrawal of funds, but also raise questions about whether they will justify the longer-term consequences. Future researchers may be interested in addressing these questions as more data become available, as well as comparing the effectiveness of early withdrawal policies across countries. For practitioners, there are opportunities to design interventions that encourage withdrawers to re-contribute towards their retirement savings and help them to remain on track for a comfortable retirement. The sooner such interventions can be deployed, the smaller the impact that the withdrawals will have on citizens when they reach retirement age.

8.   REFERENCES

Abadie, A., & Spiess, J. (2021). Robust post-matching inference. *Journal of the American Statistical Association*, 1–13. https://doi.org/10.1080/01621459.2020.1840383

Agarwal, S., Pan, J., & Qian, W. (2020). Age of decision: Pension savings withdrawal and consumption and debt response. *Management Science*, *66*(1), 43–69. https://doi.org/10.1287/mnsc.2018.3148

Amromin, G., & Smith, P. (2003). What explains early withdrawals from retirement accounts? Evidence from a panel of taxpayers. *National Tax Journal*, *56*(3), 595–612. https://doi.org/10.17310/ntj.2003.3.10

Argento, R., Bryant, V. L., & Sabelhaus, J. (2015). Early withdrawals from retirement accounts during the Great Recession. *Contemporary Economic Policy*, *33*(1), 1–16. https://doi.org/10.1111/coep.12064

Austin, P. C. (2009). Balance diagnostics for comparing the distribution of baseline covariates between treatment groups in propensity-score matched samples. *Statistics in Medicine*, *28*(25), 3083–3107. https://doi.org/10.1002/sim.3697

Australian Bureau of Statistics. (2021). *Household financial resources* (December 2020). https://www.abs.gov.au/statistics/economy/finance/household-financial-resources/latest-release#data-download

Australian Prudential Regulation Authority. (2021a). *Annual fund-level superannuation statistics June 2020*. https://www.apra.gov.au/sites/default/files/2021-03/Annual%20fund-level%20superannuation%20statistics%20June%202020.xlsx

Australian Prudential Regulation Authority. (2021b). *COVID-19 Early Release Scheme* (Issue 36; Issue Issue 36). https://www.apra.gov.au/covid-19-early-release-scheme-issue-36

Australian Prudential Regulation Authority. (2021c). *Quarterly superannuation performance statistics highlights* (June 2021; Issue June 2021). https://www.apra.gov.au/sites/default/files/2021-08/Quarterly%20superannuation%20performance%20statistics%20highlights%20-%20June%202021.pdf

Bateman, H., Dobrescu, I., Liu, J., Newell, B. R., & Thorp, S. (2021). *Determinants of early-access to retirement savings: Lessons from the COVID-19 pandemic*. https://www.cepar.edu.au/sites/default/files/Determinants%20of%20Early%20Access%20to%20Retirement%20Savings_Lessons%20from%20the%20COVID19%20Pandemic_BatemanDobrescuLiuNewellThorp_July21.pdf

Beshears, J., Choi, J. J., Hurwitz, J., Laibson, D., & Madrian, B. C. (2015). Liquidity in retirement savings systems: An international comparison. *American Economic Review*, *105*(5), 420–425. https://doi.org/10.1257/aer.p20151004

Bosch, M., Caballero, G., Cofre, F., Gonzalez, S., Hand, A., Keller, L., & Silva-Porto, M. T. (2019). *How to promote retirement savings for low-income and independent workers: The cases of Chile, Colombia, Mexico and Peru*. Inter-American Development Bank. https://doi.org/10.18235/0002016

Brüggen, E. C., Hogreve, J., Holmlund, M., Kabadayi, S., & Löfgren, M. (2017). Financial well-being: A conceptualization and research agenda. *Journal of Business Research*, *79*, 228–237. https://doi.org/10.1016/j.jbusres.2017.03.013

Butler, B. (2020, March 23). Early access to superannuation over coronavirus should be last resort – advocates. *The Guardian: Australian Edition*. https://www.theguardian.com/australia-news/2020/mar/23/early-access-to-superannuation-over-coronavirus-should-be-last-resort-advocates

Butrica, B. A., Zedlewski, S. R., & Issa, P. (2010). *Are early withdrawals from retirement accounts a problem?* https://www.urban.org/sites/default/files/publication/28711/412108-Are-Early-Withdrawals-from-Retirement-Accounts-a-Problem-.PDF

Catherine, S., Miller, M., & Sarin, N. (2020). Relaxing household liquidity constraints through social security. *Journal of Public Economics*, *189*, 104243. https://doi.org/10.1016/j.jpubeco.2020.104243

Cinelli, C., Ferwerda, J., & Hazlett, C. (2020). *sensemakr: Sensitivity analysis tools for regression models* (0.1.3) [Computer software]. https://CRAN.R-project.org/package=sensemakr

Cinelli, C., & Hazlett, C. (2020). Making sense of sensitivity: Extending omitted variable bias. *Journal of the Royal Statistical Society: Series B (Statistical Methodology)*, *82*(1), 39–67. https://doi.org/10.1111/rssb.12348

Clark, R. L., Lusardi, A., & Mitchell, O. S. (2021). Financial fragility during the COVID-19 pandemic. *AEA Papers and Proceedings*, *111*, 292–296. https://doi.org/10.1257/pandp.20211000

Clarke, C., & Robb, K. (2020, April 29). Coronavirus has forced Samuel to dip into his superannuation and he is concerned about the long-term impact. *ABC News*. https://www.abc.net.au/news/2020-04-29/super-or-bust:-the-australians-dipping-into-retirement-savings/12194514

Comerton-Forde, C., Ip, E., Ribar, D. C., Ross, J., Salamanca, N., & Tsiaplias, S. (2018). *Using survey and banking data to measure financial wellbeing* (No. 1; Commonwealth Bank of Australia and Melbourne Institute Financial Wellbeing Scales Technical Report, Issue No. 1). https://fbe.unimelb.edu.au/__data/assets/pdf_file/0010/2839429/CBA_MI_Tech_Report_No_1.pdf

Consumer Financial Protection Bureau. (2017). *CFPB Financial Well-Being Scale: Scale development technical report*. https://files.consumerfinance.gov/f/documents/201705_cfpb_financial-well-being-scale-technical-report.pdf

Dehejia, R. H., & Wahba, S. (1999). Causal effects in nonexperimental studies: Reevaluating the evaluation of training programs. *Journal of the American Statistical Association*, *94*(448), 1053–1062. https://doi.org/10.1080/01621459.1999.10473858

Dehejia, R. H., & Wahba, S. (2002). Propensity score-matching methods for nonexperimental causal studies. *Review of Economics and Statistics*, *84*(1), 151–161. https://doi.org/10.1162/003465302317331982

Demirgüç-Kunt, A., Klapper, L., & Panos, G. A. (2016). *Saving for old age* (World Bank Policy Research Working Paper No. 7693; Issue No. 7693). The World Bank. https://doi.org/10.1596/1813-9450-7693

Eberhardt, W., Brüggen, E., Post, T., & Hoet, C. (2021). Engagement behavior and financial well-being: The effect of message framing in online pension communication. *International Journal of Research in Marketing*, *38*(2), 448–471. https://doi.org/10.1016/j.ijresmar.2020.11.002

Feher, C., & de Bidegain, I. (2020). *Pension schemes in the COVID-19 crisis: Impacts and policy considerations* (Special Series on COVID-19). https://www.imf.org/~/media/Files/Publications/covid19-special-notes/enspecial-series-on-covid19pension-schemes-in-the-covid19-crisis-impacts-and-policy-considerations.ashx?la=en&utm_medium=email&utm_source=govdelivery

Fernihough, A. (2019). *mfx: Marginal effects, odds ratios, and incidence rate ratios for GLMs* (1.2-2) [Computer software]. https://CRAN.R-project.org/package=mfx

Gentilini, U., Almenfi, M., Blomquist, J., Dale, P., Fontenez, M. B., Galicia, G., Lopez, V., Marin, G., Mujica, I. V., Newhouse, D., Palacios, R., Quiroz, A. P., Alas, C. R., Sabharwal, G., & Weber, M. (2021). *Social protection and jobs responses to COVID-19: A real-time review of country measures*. World Bank. https://openknowledge.worldbank.org/handle/10986/33635

Ghilarducci, T., Papadopoulos, M., & Webb, A. (2017). *Inadequate retirement savings for workers nearing retirement* (Policy Note Series). Schwartz Center for Economic Policy Analysis and Department of Economics. https://www.economicpolicyresearch.org/resource-library/research/inadequate-retirement-savings-for-workers-nearing-retirement

Goda, G. S., Manchester, C. F., & Sojourner, A. J. (2014). What will my account really be worth? Experimental evidence on how retirement income projections affect saving. *Journal of Public Economics*, *119*, 80–92. https://doi.org/10.1016/j.jpubeco.2014.08.005

Goldstein, D. G., Hershfield, H. E., & Benartzi, S. (2016). The illusion of wealth and its reversal. *Journal of Marketing Research*, *53*(5), 804–813. https://doi.org/10.1509/jmr.14.0652

Greifer, N. (2020). *cobalt: Covariate balance tables and plots* (4.2.3) [Computer software]. https://CRAN.R-project.org/package=cobalt

Greninger, S. (1996). Ratios and benchmarks for measuring the financial well-being of families and individuals. *Financial Services Review*, *5*(1), 57–70. https://doi.org/10.1016/S1057-0810(96)90027-X

Haisken-DeNew, J., Ribar, D. C., Salamanca, N., Nicastro, A., & Ross, J. (2019). *Improving the Commonwealth Bank of Australia-Melbourne Institute Observed Financial Wellbeing Scale*. https://fbe.unimelb.edu.au/__data/assets/pdf_file/0009/3045708/CBA_MI_Tech_Report_No_3.pdf

Ho, D. E., Imai, K., King, G., & Stuart, E. A. (2011). MatchIt: Nonparametric preprocessing for parametric causal inference. *Journal of Statistical Software*, *42*(8), 1–28.

Hoffmann, A. O. I., & McNair, S. J. (2019). How does consumers' financial vulnerability relate to positive and negative financial outcomes? The mediating role of individual psychological characteristics. *Journal of Consumer Affairs*, *53*(4), 1630–1673. https://doi.org/10.1111/joca.12233

Hoffmann, A. O. I., McNair, S., & Pallant, J., I. (2021). The financial vulnerability trap: Using latent transition analysis to explore the dynamics of consumers' financial vulnerability over time. *European Journal of Marketing*, *55*(6), 1569–1593. https://doi.org/10.1108/EJM-04-2020-0255

Kahneman, D., & Tversky, A. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, *185*(4157), 1124–1131.

King, G., & Nielsen, R. (2019). Why propensity scores should not be used for matching. *Political Analysis*, *27*(4), 435–454. https://doi.org/10.1017/pan.2019.11

Krijnen, J. M. T., Tannenbaum, D., & Fox, C. R. (2017). Choice architecture 2.0: Behavioral policy as an implicit social interaction. *Behavioral Science & Policy*, *3*(2), i–18. https://doi.org/10.1353/bsp.2017.0010

Lechner, M. (2008). A note on the common support problem in applied evaluation studies. *Annales d'Économie et de Statistiqu*, *91/92*, 217–235. https://doi.org/10.2307/27917246

Lee, S. T., & Hanna, S. D. (2020). Financial knowledge overconfidence and early withdrawals from retirement accounts. *FINANCIAL PLANNING REVIEW*, *3*(2), e1091. https://doi.org/10.1002/cfp2.1091

Loibl, C., Summers, B., McNair, S., & Bruine de Bruin, W. (2019). Pension Freedom Day in the United Kingdom: Early evaluation of consumer response. *International Journal of Consumer Studies*, *43*(1), 35–45. https://doi.org/10.1111/ijcs.12481

Lorca, M. (2021). Effects of COVID-19 early release of pension funds: The case of Chile. *Journal of Risk and Insurance*, *88*(4), 903–936. https://doi.org/10.1111/jori.12365

Lusardi, A., Schneider, D., & Tufano, P. (2011). Financially fragile households: Evidence and implications. *Brookings Papers on Economic Activity*, *2011*(1), 83–134. https://doi.org/10.1353/eca.2011.0002

Members Equity Bank. (2020). *Household financial comfort report* (17th edition; Issue 17th edition). https://www.mebank.com.au/getmedia/6859951b-0eb3-4360-a681-7e683bb267ed/ME_HFCR_Feb2020_17th-survey.pdf

Muir, K., Hamilton, M., Noone, J., Marjolin, A., Salignac, F., & Saunders, P. (2017). *Exploring financial wellbeing in the Australian context*. Centre for Social Impact & Social Policy Research Centre - University of New South Wales Sydney. https://www.csi.edu.au/media/Exploring_Financial_Wellbeing_in_the_Australian_Context_Final_Report.pdf

Netemeyer, R. G., Warmath, D., Fernandes, D., & Lynch, J. G. (2018). How am I doing? Perceived financial well-being, its potential antecedents, and its relation to overall well-being. *Journal of Consumer Research*, *45*(1), 68–89. https://doi.org/10.1093/jcr/ucx109

O'Donoghue, T., & Rabin, M. (1999). Doing it now or later. *American Economic Review*, *89*(1), 103–124. https://doi.org/10.1257/aer.89.1.103

Organisation for Economic Co-operation and Development. (2020). *Retirement savings in the time of COVID-19*. https://read.oecd-ilibrary.org/view/?ref=134_134560-duimle4old&title=Retirement-savings-in-the-time-of-COVID-19

Prawitz, A. D., Garman, E. T., Sorhaindo, B., O'Neill, B., Kim, J., & Drentea, P. (2006). InCharge Financial Distress/Financial Well-Being Scale: Development, administration, and score interpretation. *Financial Counseling and Planning*, *17*(1), 34–50. https://doi.org/10.1037/t60365-000

R Core Team. (2020). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing. https://www.R-project.org/

Roddan, M. (2020, June 19). ATO investigating early super release tax avoidance. *Australian Financial Review*. https://www.afr.com/policy/tax-and-super/ato-investigating-early-super-release-tax-avoidance-20200619-p5547w

Rosenbaum, P. R., & Rubin, D. B. (1983a). Assessing sensitivity to an unobserved binary covariate in an observational study with binary outcome. *Journal of the Royal Statistical Society: Series B (Methodological)*, *45*(2), 212–218.

Rosenbaum, P. R., & Rubin, D. B. (1983b). The central role of the propensity score in observational studies for causal effects. *Biometrika*, *70*(1), 41–55. https://doi.org/10.1093/biomet/70.1.41

Rubin, D. B. (2001). Using propensity scores to help design observational studies: Application to the tobacco litigation. *Health Services & Outcomes Research Methodology*, *2*(3–4), 169–188.

Ryan, P. (2020, June 1). Superannuation withdrawals spent on gambling, alcohol, takeaway food: Report. *ABC News*. https://www.abc.net.au/news/2020-06-01/superannuation-withdrawals-spent-on-gambling-alcohol-takeaway/12306710

Smyrnis, G., Bateman, H., Dobrescu, I., Newell, B. R., & Thorp, S. (2021). *Motivated saving: The impact of projections on retirement contributions*. https://doi.org/10.2139/ssrn.3464813

Stango, V., & Zinman, J. (2009). Exponential growth bias and household finance. *The Journal of Finance*, *64*(6), 2807–2849. https://doi.org/10.1111/j.1540-6261.2009.01518.x

Stavins, J. (2021). Unprepared for financial shocks: Emergency savings and credit card debt. *Contemporary Economic Policy*, *39*(1), 59–82. https://doi.org/10.1111/coep.12477

Stuart, E. A. (2010). Matching methods for causal inference: A review and a look forward. *Statistical Science*, *25*(1), 1–21. https://doi.org/10.1214/09-STS313

Warren, D. (2021). *The COVID-19 early release of superannuation: Through a family lens* (Report no. 6; Families in Australia Survey: Towards COVID Normal, Issue Report no. 6). https://aifs.gov.au/publications/covid-19-early-release-superannuation-through-family-lens

Whittaker, N. (2020, March 31). The real cost of your emergency super access. *The Sydney Morning Herald*. https://www.smh.com.au/money/super-and-retirement/the-real-cost-of-your-emergency-super-access-20200330-p54fbj.html

Wu, W., West, S. G., & Hughes, J. N. (2008). Effect of retention in first grade on children's achievement trajectories over 4 years: A piecewise growth analysis using propensity score matching. *Journal of Educational Psychology*, *100*(4), 727–740. https://doi.org/10.1037/a0013098

Zhao, Z. (2008). Sensitivity of propensity score methods to the specifications. *Economics Letters*, *98*(3), 309–319. https://doi.org/10.1016/j.econlet.2007.05.010

Allowing Early Access to Retirement Savings: Lessons from Australia

Nathan Wang-Ly[a,b] and Ben R. Newell[a]

[a] School of Psychology, UNSW Sydney, NSW 2052, Australia

[b] Commonwealth Bank of Australia, NSW 2015, Australia

Corresponding author:

Please direct any correspondence regarding this submission to Nathan Wang-Ly

(nathan.wang-ly@unsw.edu.au).

Declarations of interest:

Nathan Wang-Ly reports a relationship with Commonwealth Bank of Australia that includes: employment.

Ben R. Newell reports a relationship with Cbus Superannuation that includes: funding grants.

Data statement:

The research data provided for this project by Commonwealth Bank of Australia is confidential and cannot be made publicly available.