CAMBRIDGE
UNIVERSITY PRESS

ARTICLE

Early pension withdrawals in Chile during the pandemic

Olga M. Fuentes[1], Olivia S. Mitchell[2]* (iD) and Félix Villatoro[3] (iD)

[1]World Bank Group, 1818 H St NW, Washington, DC 20433, USA, [2]The Wharton School, University of Pennsylvania, 3620 Locust Walk, Ste. 3000 SH-DH, Philadelphia, PA 19104,USA and [3]Business School, Universidad Adolfo Ibáñez, Diagonal Las Torres 2640, Peñalolén, Santiago, Chile
***Corresponding author:** Olivia S. Mitchell; Email: mitchelo@wharton.upenn.edu

Abstract

At the onset of the Covid-19 crisis, and with one of the largest and best-funded defined contribution programs in Latin America, Chile held over USD $200 bn in assets (or more than 80% of GDP). Reacting to populist pressures during the pandemic, however, the Congress gave non-retired participants three separate opportunities to tap into their retirement accounts, leaving some 4.2 million participants with zero retirement savings and draining around $50 bn from the system. This paper explores several hypotheses regarding why people withdrew their pension money early, and it also presents evidence regarding the likely impact of this short-term policy on long-term retirement wellbeing. We conclude with lessons for global policymakers seeking to protect pension assets critical for retirement security.

During the Covid-19 period, early withdrawals of pension assets were permitted in several countries including Chile, Peru, Australia, the US, and Malaysia (among others; SSA, 2020). Nevertheless, relatively little is known about either the near-term or the potential longer-term results of permitting such access. Indeed, the OECD (2020) warned against the widespread practice of contribution holidays and grants of access to pension savings, as well as allowing funded pension assets to be used for 'pet projects' (Cumbo, 2020). This paper examines the factors driving early pension withdrawals in Chile during the Covid-19 crisis of 2020–2021, and provides projections of their anticipated effects on retirement wellbeing.

Prior to the pandemic, Chile's national mandatory funded defined contribution (DC) plan, launched in 1981, held more than US$ 200 bn in assets or over 80% of GDP, according to the Chilean Pension Regulator (Superintendencia de Pensiones, 2019*a*). When the Covid-19 pandemic arrived, it hit the Chilean economy very hard. According to the National Statistics Bureau (Instituto Nacional de Estadísticas, 2020), unemployment peaked at 13.1% in July 2020. While this figure recently fell to around 8%, it is still higher than its pre-Covid levels (7%). Moreover, reported job losses were higher for women, and low- and middle-income households were particularly hard-hit. Responding to populist calls for assistance due to economic hardships wrought by Covid-19, the Chilean legislature permitted three early pension withdrawals during the 2020–2021 period. As we will show, many system participants withdrew the vast majority and even the entirety of their pension assets.

Amidst these developments, government stimulus measures were also launched in Chile, including cash transfers, job protection (JP) schemes, higher unemployment insurance (UI) benefits, and a

loosening of requirements to receive UI benefits. According to the International Monetary Fund (2021), the resources devoted to these measures amounted to 14.1% of GDP, far larger than the average of 4.4% of GDP for emerging countries. Below we discuss these in more detail and evaluate whether these social safety net measures cushioned the need for employees to take early withdrawals from their pensions.

In what follows, we add to the existing literature new microeconomic insights on the drivers and effects of permitting early pension withdrawals. Specifically, we address several open questions regarding Chileans' early pension withdrawal behavior:

- Who took early withdrawals and how did this relate to indicators of financial hardship? Who ended up with zero or close to zero pension accounts as a result? What appears to have motivated people to take the early withdrawals?
- Did access to social insurance benefits such as unemployment benefits and government employment subsidies offset the need for withdrawals?
- What can we say about where the money withdrawn ended up?
- What is likely to be the impact of the withdrawals on peoples' eventual pension benefits, as well as the fiscal impact of these withdrawals?

Our key findings are that a majority of active participants took early pension withdrawals at least once in Chile, and average amounts taken were 3–9 times workers' average monthly earnings; only 3% of participants took no early withdrawals at all. There is some evidence that financial fragility was behind the early access, as lower-paid participants withdrew more often and took a higher fraction of their starting balances than did the more highly-paid. We also find that, of people with the smaller pre-pandemic accounts, those who received UI or JP benefits also took more withdrawals from their plans, as well as a higher percent of their starting balances. Therefore, there is little evidence that receipt of government social insurance benefits dissuaded the neediest from tapping their retirement assets.

Prior to the pandemic, workers who held more equity in their retirement accounts compared to the 'default' age-based rule were also those who withdrew a higher fraction of their balances, compared to those who held the default portfolios. This suggests that those favoring more equity may have withdrawn their pension assets to invest in their preferred, riskier, asset allocations. In addition, we explore whether financial illiteracy and mistrust of the pension system could have prompted participants to pull out their money early. We show that women, who are generally less financially literate than men (Lusardi and Mitchell, 2014), were indeed more likely to pull out a higher share of their starting balances. Additionally, workers living in regions with higher average education withdrew a smaller share of their retirement assets, and more education is positively correlated with financial literacy (albeit not perfectly; see Lusardi *et al.*, 2010), again supportive of that hypothesis. As we can link withdrawal patterns with data on lack of trust in the pension system gathered from a survey conducted prior to the pandemic, we discover that participants living in regions holding the most favorable views of the Chilean pension system withdrew a smaller share of their starting balances.

In terms of where the money ended up, we document that a substantial portion of the money leaving the DC pension system via early withdrawals was rolled over to relatively more liquid savings accounts with no withdrawal restrictions.

Finally, we simulate the likely impact of the observed withdrawal patterns on projected pension payments. Not surprisingly, older workers' pension benefits are predicted to drop the most, particularly for the low-paid and those who contributed little over their lifetimes. In fact, we determine that projected pension payments for those currently age 55 + will be 70% lower than without the withdrawals. We also show that such shortfalls could be rectified if men worked another 11 years, and women another 8.5 years – both well beyond the current retirement ages in Chile. Pension benefit cuts are estimated to be smaller but still over 15% for the youngest age groups.

Our paper contributes to the literature on household financial decision making, as well as research on how to design more shock-resistant pension systems (Mitchell, 2021). Among the options worth considering are rainy day or 'side car' savings accounts, where payroll deduction, pre-commitment features, and worker inertia can be incentivized to build emergency savings, while at the same time increasing illiquid retirement savings invested with a longer time term horizon. We also note the critical effect of financial literacy in helping workers to do a better job saving, managing their investment portfolios, and decumulating their assets in old age.

1. Background and data

1.1 The setting

Chile's three-pillar retirement system was introduced in 1981. Its largest, and most widely admired, component was a mandatory funded DC scheme covering formal sector workers who contributed 10% of their taxable income into an individual account managed by pension managers known as *Administradoras de Fondos de Pensión* (AFPs). AFPs are for-profit and single-purpose private firms in charge of collecting contributions, keeping records of individual accounts, investing funds, and paying some benefits such as disability and old-age pensions. There was also a government-financed Solidarity Pension scheme that paid non-contributory benefits for very low-income retirees. Eligibility for a Solidarity Pension required a non-existent or low self-financed pension, sufficient years of residency, and being among the poorest 60% of individuals at a given age.[1] Finally, there has long been a voluntary savings pillar in the Chilean system, aimed at boosting self-financed old-age benefits; this pillar included state-matched incentives and tax subsidies for participants.[2]

During the Covid pandemic, political pressure mounted to grant system participants early access to their individual pension accounts, which historically had been illiquid prior to retirement age. With practically unanimous support from Congress, three early withdrawals were eventually permitted: the first began in July 2020, the second in December 2020, and the third in April 2021. Withdrawals could be made on a voluntary basis for up to one year after the law's passage, and access was unconditional, without requirements or restrictions. For the first two rounds, only active affiliates and pensioners were allowed to tap their savings, while annuitants were also included in the third round.[3] The second withdrawal was the only one that required individuals to pay income tax on the amount taken, and only if their monthly earnings exceeded US $2,100.

So-called 'leakage' of assets from funded pensions has long attracted researcher and policymaker attention, even well before the Covid-19 pandemic.[4] On the whole, these studies found that workers tended to take early withdrawals from their retirement accounts without understanding the likely consequences for their subsequent retirement wellbeing (Lee and Hanna, 2020). This is, in part, because pension participants often underestimate their potential longevity (O'Connell, 2011; O'Dea and

---

[1]In January 2022 the government replaced the Solidarity Pension with a Universal Guaranteed Pension (in Spanish *Pensión Garantizada Universal*– PGU). The PGU is available to the poorest 90% of the population with age 65 and above. As this was not in place during the first two years of the pandemic, we do not discuss further below.

[2]One type of voluntary pension savings plan, called *Ahorro Previsional Voluntario* (APV), allows workers to contribute under two alternatives tax regimes: (1) tax deductions for medium to high income workers (those paying income taxes), where voluntary savings and deducted from the taxable income base, and (2) state matching contributions up to a limit for low-income workers. Benefits are taxed on retirement. Savings made under this type of voluntary saving plans can be withdrawn before retirement but are subject to income taxes with a penalty (i.e., they lose tax incentives) or the restitution of the state subsidy, depending on the regime selected. A second type, called *Cuenta de Ahorro Voluntario* (CAV or Cuenta 2) allows affiliates to save in an individual account managed by an AFP with the possibility of freely withdrawing their savings up to 24 times in a year. The savings in this type of plan are not considered social security contributions and are not subject to tax incentives. A third type, called *Depositos Convenidos (Agreed-on Deposits)*, is a saving plan agreed with the employer in which the worker receive employer contributions with tax benefits which can only be withdrawn on retirement.

[3]Several insurance firms discussed taking legal action to contest the effects that this measure would have on previously-issued annuity contracts.

[4]See for instance Amromin and Smith (2003), Argento *et al.* (2015), Beshears *et al.* (2012), Bryant *et al.* (2011). Butrica *et al.* (2010a, 2010b), Engelhardt (2002), Lee and Hanna (2020), Poterba *et al.* (1999), and Sabelhaus and Weiner (1999).

Sturrock, 2023; Hurwitz *et al.*, 2022), and hence they under-save and overspend as a result. Moreover, and particularly in Chile, little effort was devoted in the past to enhancing workers' financial literacy, which helps explain why so many were very poorly-informed about the importance of saving for retirement and the role of the contributory DC system (Arenas de Mesa *et al.*, 2008; Garabato, 2016).

During the pandemic, several other nations also permitted Covid-driven pension fund withdrawals (e.g., Dominguez and Pierola, 2021; Guerrero, 2021; Marusic, 2021), yet we are aware of only a few academic studies that have sought to evaluate the factors driving early withdrawals on pension participants during the pandemic: two on Australia (Bateman *et al.*, 2020; Wang-Ly and Newell, 2022), and two on Chile (Lorca, 2021; Madeira 2022). The Australian analyses found that the majority of those permitted to take up to AU$10,000 as a maximum payout withdrew the entire amount permitted. Additionally, half of the Australians taking payouts either underestimated or failed to consider the impact on their retirement incomes. Lorca (2021) simulated the impact of the first withdrawal in Chile, but he lacked data on actual withdrawal patterns and amounts across all three rounds of withdrawals.[5] Madeira (2022) also used pre-pandemic data from 2017 to simulate the potential impacts of withdrawals on debt. Accordingly, our contribution is to provide a detailed examination of the factors driving and consequences of permitting early pension system withdrawals in Chile. The results suggest lessons not only for that country but for others that might contemplate following in that nation's footsteps.

1.2 The data

In the face of Covid's onset in 2020, Chile's Congress permitted early withdrawals from the national mandatory DC accounts, something that had never occurred previously in that country. Specifically, participants were allowed to withdraw 10% of their mandatory pension savings balances three distinct times during the pandemic, with lower and upper withdrawal bounds (and these limits remained in place for all three withdrawal periods). Figure 1 shows the amount (in US $) that could be drawn as a function of a participant's pension account balance. The design established four tranches: the first went from $0 to US $1,400; the second included balances from US $1,400 to US $14,000; the third tranche from US $14,000 to USD $62,000; and the final tranche above US $62,000.[6] In our data, which we describe below, we can see that approximately 20.1% of individuals who took the first withdrawal fell in the first tranche (thus emptying their accounts); 43.3% fell in the second tranche (withdrawing between 99.99% and 10.01% of their accounts); 35.2% fell in the third tranche (withdrawing effectively 10% of their accounts); while only 4.6% were in the fourth tranche (withdrawing less than 10% of their accounts). These numbers did not vary greatly for the second and third withdrawals.

It is important to note that Chileans with assets in the first (lowest) tranche were allowed to withdraw 100% of their pension savings immediately. In the case of the second tranche, the withdrawal amount was capped at US $1,400, meaning that the percentage of the account balance that could be withdrawn tapered down from 99.9% to 10% for that tranche's upper limit. The third tranche was the only one where the allowable amount withdrawn was fixed at exactly 10% of the participant's balance in the pension. Finally, for the fourth tranche, individuals could take up US $6,200, meaning that the maximum percentage of their balances they could withdraw was less than 10%. Below we show that the withdrawal rule design likely resulted in different impacts across individuals, because of the differences in the percentage of the balances that could be taken.

To analyze the early withdrawal patterns, we use an anonymized database of the Chilean Pension Regulator containing administrative records for all individuals with pension accounts in the Chilean pension system. This allows us to characterize several aspects of the withdrawal process, including

---

[5]Fernandez and Villatoro (2020) looked at the impacts of early withdrawal on financial markets, concluding that, thanks to the flexibilization of investment limits by the pension Supervisor as well as the liquidity provided by the Central Bank, moving the funds' portfolios into more cash had few immediate consequences for local financial markets or key prices.

[6]The tranches' limits were defined in UF (*Unidades de Fomento*), an inflation-linked unit of account. One UF was approximately equal to US $40.

Figure 1. Chile's pension withdrawal rule design during the pandemic.
Source: Authors' elaboration.

the number of withdrawal requests; the average amount withdrawn; the timing of withdrawals; and how much was withdrawn, both in monetary terms and as a percentage of participants' initial account balances. Accordingly, we can identify accounts with zero funds remaining as a result of the withdrawals.[7] Additionally, the administrative records provide us with key socioeconomic information including the worker's gender, age, density of employee contributions, and average earnings prior to the pandemic, along with pension savings history, and saving patterns post-withdrawal.

From the register of early pension fund withdrawals, we obtained data on each system participant including the date(s) when withdrawal(s) were requested; the amounts withdrawn in Chilean pesos and as percentage of the person's balance; and the withdrawal amounts requested as a percentage of the maximum amount to which the person was entitled.[8] This information was captured from July 2020 until April of 2022.[9] Next, we used the Regulator's administrative records to obtain two types of variables. The first set corresponds to time-invariant characteristics for each pension participant: gender; nationality (Chilean or foreign); age (measured at the time the first withdrawal was permitted); the person's density of contributions (or percent of months contributed) from having joined the system until June 2020; the person's status within the pension system (non-retired member, retired, deceased, disability benefit recipient); and the difference between the person's actual equity exposure in his/her mandatory pension savings during June 2020 and the equity exposure under the system's default investment option. The second group of variables was time-varying and included each

---

[7]Our administrative records extend up to April of 2022 for the three withdrawals.

[8]We exclude from our dataset individuals who, in any given month, had a wage above the 99th percentile of the remuneration distribution; nevertheless, if these outliers are included, our main results continue to hold. For the present analysis, we also focus only on participants younger than the system-defined retirement age (60 for women, 65 for men). We also drop cases in which the amount withdrawn, measured in Chilean pesos, was larger than the maximum withdrawal allowed, which amounted to 1.5% of all observations across all three rounds of withdrawals. Retraining these outliers does not alter our main results. We also restrict the analysis to Chileans, since foreigners may face different incentives if they planned to work in Chile for only limited number of years and we lack data on whether they had accrued pension savings in their home country. We also omit retirees from this study.

[9]Additional details about the timeline, conditions, and early withdrawal windows are discussed in Fuentes *et al.* (2021).

individual's wage and mandatory as well as voluntary savings balance prior to the early withdrawal window, between August 2019 and October 2021.

To this core dataset, we appended additional administrative information drawn from the regulator's UI database for the months January 2020–April 2021. This is important as it permits us to evaluate the extent to which other sources of pandemic funding may have mitigated participants' early pension withdrawals. Since 2002, formal sector workers have been mandatorily affiliated with the Chilean Unemployment Insurance system, to which they are required to contribute 3% of their pay (to a cap). A portion of this contribution was invested in workers' individual unemployment accounts, with the remainder going to finance the Unemployment Solidarity program.[10] In the event of a job loss, workers could first receive payments from their own individual unemployment accounts; when their accounts were exhausted (and if they remained jobless), they could apply for additional benefits from the Unemployment Solidarity Fund. These UI benefits are subject to a floor and a ceiling.

During the pandemic, there were also other extraordinary measures passed, supportive of employment and household consumption. The Employment Protection Law (enacted in 2020) introduced job retention schemes where the employment contract could be suspended or working hours reduced in areas subject to lockdowns and for parents taking care of small children. Alternatively, employers could agree with their workers individually or collectively to cut worktime by up to 50%, accompanied by a pay reduction of 25% (the employer had to cover 50% and the UI system 25% of the worker's pre-pandemic earnings).[11]

Using the administrative records, we have collected data for each person-month in our file, including indicators of when the individual received UI benefits, and whether the individual received benefits associated with the JP laws. This information permits us to evaluate the extent to which other sources of pandemic funding mitigated participants' early pension withdrawals.[12]

Though our administrative data are unusually rich in terms of the labor market behavior and pension savings of participants, the dataset does not contain information regarding other factors that could have been important such as average wealth levels, financial knowledge, level of impatience, and trust in the pension system. For this reason, we also used information from the 2015 Social Protection Survey (EPS or Encuesta de Protección Social) to complement our analysis.[13] Specifically, we extracted from the EPS several variables indicating factors that varied across participants' regions.[14] These include average health status (% saying in Excellent or Good health); years of education; non-house savings; financial fragility (% saying they could not access half a year of income within a month); the percent who ever contributed to the pension system; the percent with a favorable attitude toward pensions financed by individuals' own efforts; the percent viewing a state-run pension fund manager favorably; the percent having a positive view of the Chilean pension system; and the percent of respondents who believed they would live longer than population life tables (optimism regarding longevity). For each of these variables, we compute means at the regional level

---

[10]For additional information see Table A1.

[11]See Table A1 for additional detail.

[12]Both the UI and job protection benefits were payable from each person's UI individual account; after those funds were exhausted, additional payments were paid out of the government's UI solidarity fund. In the dataset, we can differentiate between these two sources of benefits. To control for outliers, we omit individuals who, in any month, received UI benefits greater than the 99th percentile of the system's members. Unfortunately, we lack microdata regarding which individuals received other government payments such as Emergency Family Income (IFE or Ingreso Familiar de Emergencia), and 0% interest loans; these were targeted to extremely vulnerable individuals in 2020.

[13]This survey is managed by the Governments' Social Security Undersecretariat. https://www.previsionsocial.gob.cl/sps/biblioteca/encuesta-de-proteccion-social/

[14]Chile is divided into 16 regions: Arica and Parinacota, Tarapacá, Antofagasta, Atacama, and Coquimbo, in the northern part. Valparaíso, O'Higgins, Maule, Ñuble, and the Metropolitan region, in the central part. Biobío, Araucanía, Los Ríos, Los Lagos, Aysén, and Magallanes, in the south. Approximately half of the population lives in the Metropolitan region, where Santiago, the capital, is located.

which were then imputed to plan participants using region of residence in the Pension Regulator database.[15] (See Appendix Tables 1 and 2 for variable definitions and descriptive statistics.)

1.3 Hypotheses

In what follows, we examine several potential explanations for early pension withdrawal patterns that may help explain Chileans' eagerness to pull their pension assets out of the system. Specifically, we evaluate the following hypotheses:

H1: Economic hardship during the pandemic prompted workers to take early withdrawals. To examine whether people who experienced economic hardship during the pandemic were more likely to withdraw pension assets and took a higher share of their pension balances, we first compare withdrawal patterns of the low- versus the higher-income counterparts. We also evaluate whether people with lower balances in their retirement accounts and those with low contribution histories were relatively more likely to pull money out early. Next, we explore whether people who received UI and JP benefits were less likely to withdraw their funds early, suggesting that these social protection programs played a useful role in mitigating economic hardship and offset the need to take early withdrawals.

H2: Financial illiteracy and distrust in the Chilean pension system drove early withdrawals. Chile's pension system has been criticized by some for charging high fees and paying relatively low benefits – charges that the 2014 Pension Reform Commission discussed and largely refuted (Comisión Asesora Presidencial sobre el Sistema de Pensiones, 2015). Nevertheless, Chileans' low levels of financial literacy (Arenas *et al.*, 2008) combined with political populism (Mander and Stott, 2020) drove numerous national protests as the country approached the 2021 Presidential elections, undermining trust in the system for many.[16] While we lack direct measures of participant financial literacy and system trust, education is correlated with financial sophistication, so we posit that those living regions with higher average education would take less of their balances in early withdrawals. Another indicator of system trust is whether participants had saved via three types of voluntary accounts, called CAVs, APVs, and Agreed-on Deposits, each of which had different liquidity attributes. Thus, saving in Voluntary Saving Accounts (CAVs or 'Cuenta 2') received no tax benefits but could be withdrawn at any time without penalty; Voluntary Pension Savings (APVs) received financial and tax incentives, but any early withdrawals required returning tax benefits and state matching contributions; and Agreed-on Deposits were employer contributions with tax benefits which were illiquid until the regular retirement age. Accordingly, we would anticipate that workers who had saved in the less liquid accounts would be more likely to take early pension withdrawals, versus those holding CAVs. People who distrusted the Chilean pension system would be hypothesized to have moved money away from all three of these accounts, since they were largely managed by the same AFPs as the workers' pension accounts.

Other indicators of trust in the system from the EPS include the percent of people in the participant's region approving of the idea of self-financed pensions, having a positive image of the Chilean pension system, and favoring the adoption of a state-run AFP. We hypothesize that the first two factors would be associated with a lower probability of and smaller withdrawals, as these indicate support for the existing system. A final variable indicates mixed support for the system, as a state-run AFP did not exist at the time.

---

[15]We use the 2015 EPS survey as it was the last complete wave conducted prior to the pandemic. Also, it offers an arguably exogenous snapshot of peoples' perceptions and expectations before the Covid shock.

[16]Lopez and Rosas (2022) fielded a cross-section survey of internet users in 2021 with questions eliciting respondents' trust in the pension system and their views on early pension withdrawals. While their sample was non-representative, the evidence suggested that lower levels of trust predicted agreement with pension withdrawals during the pandemic. Fong *et al.* (2020) found that trust in private and public financial representatives was positively associated with pension saving in Singapore.

H3: Participants who believed they could invest money better than their AFP managers were more likely to take early pension withdrawals. We test this hypothesis by examining whether the participant's pension portfolio held more equity prior to the pandemic, compared to the 'age-appropriate' default set by the government.[17] Those believing they could do better than the default portfolio may have been more desirous of self-management, by taking a greater share of their pension assets when permitted to do so. According to the Pension Supervisor (see Superintendencia de Pensiones, 2019*b*), by the end of 2019 more than half of the pension system's members were assigned to the default investment scheme. Accordingly, we test whether people who had invested their pension accounts differently from the age-based defaults were more likely to take early withdrawals, than others.

H4: Pessimism regarding old-age survival prompted both the number of and level of early withdrawals. The EPS dataset also contained questions about peoples' subjective survival probabilities, which we compared to Chilean life tables by age and sex. We hypothesize that in areas where people anticipated living less long than the life tables, they would be more likely to take early withdrawals than their counterparts more optimistic about their retirement lifespans.

2. Empirical results

2.1 Descriptive statistics

Table 1 reports the main characteristics of the pension system's active members (i.e., excluding retired and deceased individuals as well as foreigners) along with the characteristics of those taking withdrawals. The bivariate analysis identifies members according to the number of early withdrawals they took, namely 0, 1, 2 or 3;[18] means and significance tests for their differences are reported, comparing individuals with no withdrawals versus those with one or more withdrawals. Overall, we see that more than 66% of all 8.9 million active participants took withdrawals all three times, while the group with no withdrawals is the smallest (about 3.4% of workers). Overall, we see that men, older persons, the higher paid, those with the greatest history of contributions, and having larger pension account balances were significantly more likely to take withdrawals. The typical withdrawal was around 91% of the workers' initial account balance at the outset, with subsequent withdrawals falling to roughly half (55%) of the initial account at baseline. Amounts withdrawn totaled between three to nine times the workers' average monthly earnings, underscoring just how large the amounts taken were. Interestingly, there is also a positive correlation between participants' historical contribution density, defined as the fraction of years each person contributed since joining the system until 2020, and the number of withdrawals taken.

The fact that higher-paid individuals, as well as those with higher pension account balances and higher pension contribution densities were more likely to pull money out of their pensions contradicts *H1*, since if economic hardship had been the main factor driving people to withdraw pension assets early, we would have expected a negative correlation. In any case it is necessary to distinguish between the number of withdrawals (and absolute amounts withdrawn), and the withdrawal taken as percentage of the initial balance. We explore this point below, by summarizing the characteristics of people

---

[17]The Chilean pension system defaults people into a target retirement date investment approach for members who do not choose their pension investment allocation. This is based on a multi-fund scheme with five funds with differing exposure to equity. The default investment strategy follows a life cycle glide path, where the transition across funds reduces the saver's exposure to equity as the individuals approach retirement age. By default, individuals have a 60% equity exposure until age 35, where they are moved to a 40% equity exposure fund. Afterwards, and ten years prior the legal retirement age (65 for males and 60 for females), equity exposure is further reduced to 20%. The changes in asset allocations take place over a four-year period.

[18]Note that different patterns of withdrawals would have been possible. For instance, individuals with a total of two withdrawals could have taken the 1st and 2nd withdrawals, the 1st and 3rd, or only the 2nd and 3rd. Nevertheless, the most usual patterns in the data are straightforward. Most individuals who took out their funds once, made the 1st withdrawal; while those who took funds twice made the 1st and 2nd withdrawals.

Table 1. Characteristics of those taking 0, 1, 2, 3 early pension withdrawals

Variable	None	One	Two	Three
Withdrawal 1	0.00	0.98***	0.99***	1***
Withdrawal 2	0.00	0.01***	0.89***	1***
Withdrawal 3	0.00	0.01***	0.12***	1***
# Withdrawals	0.00	1***	2***	3***
Withdrawal (USD)	0.00	798.88***	2,791.71***	5,700.84***
Withdrawal/Start balance (%)	0.00	91.18***	85.57***	55.38***
Withdrawal/Adj. earnings	0.00	1.36***	4.38***	8.63***
Female (1/0)	0.46	0.61***	0.54***	0.42***
Age (years)	40.22	36.38***	37.85***	42.67***
Av earnings (USD 8/2019–4/2021)	202.51	183.8***	413.65***	618.46***
Density (8/2019–4/2021)	0.15	0.16***	0.41***	0.64***
Balance (USD)	8,198.92	5,564.4***	11,160.3***	18,055.02***
Diff. in equity (%)	4.91	3.84***	3.43***	3.98***
Any UI (1/2020–4/2021)	0.01	0.02***	0.06***	0.11***
Any Empl Protec Bens (1/2020–4/2021)	0.01	0.01***	0.05***	0.07***
Account 2	0.04	0.03***	0.05***	0.07***
VPS	0.03	0.02***	0.05***	0.1***
Deposits	0.01	0***	0.01***	0.01***
N	303,144	1,450,376	1,268,653	5,935,184

Notes: * p < 0.10; **p < 0.05; ***p < 0.01. This table reports t tests on the means and significance levels for the differences reported, comparing individuals with no withdrawals versus those with one or more withdrawals.
Source: Authors' elaborations.

who completely emptied their pension accounts after the first, second, and third withdrawals; and with a multivariate regression analysis in the next section.

We also find that average withdrawal amounts are positively correlated with the number of withdrawals taken, and the differences between those taking nothing versus 1, 2, or 3 withdrawals are all statistically significant. Moreover, the percentage taken of the starting pension balance is negatively correlated with the number of withdrawals. This pattern is influenced by the withdrawals' design, which allowed those with lower balances to take out up to 100% of their balance, while simultaneously capping retirements for higher balances at levels that could be less than 10%. Individuals having only one withdrawal took over 90% of their initial balances, while those with three withdrawals took a total of 55.38%. Also, for those individuals with a single withdrawal, the amount received was around 1.36 times their average monthly earnings, whereas this number rises to 8.63 times for the group with three withdrawals.[19]

Table 2 summarizes the factors characterizing people who completely emptied their pension accounts after the first, second, and third withdrawals (the comparison group in each case is those who did not empty their accounts). As before, persons likely to end up with zero balances after each withdrawal were more likely to be women, younger, lower earners, and have had lower initial pension balances as well as lower contribution densities.

Table 2 indicates that those having received unemployment benefits as well as JP benefits were actually less likely to end up with no pension assets at all. Similarly, those having saved in voluntary personal accounts were less likely to have withdrawn their pension assets in full. Hence this provides a mixed picture regarding H1: some people who saved more withdrew more, while others who became unemployed withdrew less.

2.2 Multivariate results

Next, we contrast the non-parametric results of the last section with multivariate regression analyses focusing on two dependent variables in Table 3. The first reports peoples' total number of withdrawals

---

[19]To estimate this average, we choose the maximum between: the average wage and the minimum monthly wage.

Table 2. Characteristics of those leaving a positive versus a zero pension balance due to early withdrawals in 1st, 2nd, or 3rd withdrawal periods

	R1		R2		R3	
Variable	Pos. balance	Zero balance	Pos. balance	Zero balance	Pos. balance	Zero balance
Withdrawal 1	1	1***	1	0.99***	1	0.98***
Withdrawal 2	0.96	0.29***	1	1***	0.99	0.9***
Withdrawal 3	0.85	0.17***	0.93	0.37***	1	1***
# Withdrawals	2.8	1.46***	2.93	2.35***	2.99	2.89***
Withdrawal (USD)	5,476.08	642.36***	5,912.93	1,557.83***	6,253.15	2,322.21***
Withdrawal/Starting balance (%)	54.05	109.84***	49.5	117.09***	44.47	118.15***
Withdrawal/Adj. earnings	8.21	1.48***	8.82	3.45***	9.13	5***
Female	0.44	0.6***	0.42	0.55***	0.4	0.53***
Age	43.11	32.66***	43.75	32.32***	44.27	33.13***
Av earnings (USD 8/2019–4/2021)	636.36	64.7***	656.96	163.03***	695.9	218.05***
Density (8/2019–4/2021)	0.62	0.16***	0.65	0.35***	0.67	0.43***
Balance (USD)	18,816.38	502.17***	19,632.6	1,254.24***	21,175.06	1,923.24***
Diff. in equity (%)	4.25	2.47***	4.26	1.79***	4.41	1.77***
Any UI (1/2020–4/2021)	0.1	0.04***	0.11	0.08***	0.11	0.1***
Any Empl Protec Bens (1/2020–4/2021)	0.07	0.02***	0.07	0.05***	0.07	0.06***
Account 2	0.08	0***	0.08	0.01***	0.09	0.01***
VPS	0.1	0***	0.11	0.01***	0.12	0.01***
Deposits	0.01	0***	0.01	0***	0.01	0***
N	6,818,622	1,791,351	5,935,383	1,144,873	5,140,569	962,436

Notes: * $p < 0.10$; **$p < 0.05$; ***$p < 0.01$. R1, R2, and R3 are indicators of whether the participant took an early pension withdrawal during the first, second, or third window when permitted to do so.
Source: Authors' elaborations.

(#*Withdrawals*); the mean of this dependent variable was 2.4. The second, *Wd/Starting Balance*, refers to the total amount withdrawn as a percentage of the participant's starting account balance in July 2020 (just before the first withdrawal was permitted). The mean of this variable was 63.6%. We use the similar empirical specifications for both dependent variables (#*Withdrawals* and *Wd/Starting Balance*) estimating OLS regressions with robust standard errors:[20]

$$Y_i = \mathrm{B}X_i + \Gamma Z_i + \epsilon_i \tag{1}$$

Explanatory variables in set X_i include demographic factors (female, age, and age-squared), the participant's historical density of contribution, account balance immediately prior to the pandemic, and equity share compared to the government default level. We also include additional controls including average earnings prior to the first withdrawal period, whether the participant received any unemployment or employment protection benefits during the pandemic, and the participant's voluntary saving balances in APVs, CAVs and Agreed-on Deposits accounts. Finally, in set Z_i we incorporate the EPS variables to test our hypotheses regarding regional attitudes.

The first column of Table 3 reports OLS estimates for the #*Withdrawals* dependent variable.[21] Here we see that, holding other things constant, women were less likely to take all withdrawals allowed, although they did take a higher percentage of their overall account balances. One reason they may not have taken withdrawn in all periods is that they may have exhausted their accounts early on, due to having low balances. Interestingly, older people were more likely to take all three withdrawals, but their probability of taking a withdrawal peaked at around age 45 and declined thereafter; older workers also withdrew a smaller share of their total account values. This may speak to changing financial needs over the life cycle. Moreover, people who were more closely attached to the pension system, having had higher contribution densities, were also more likely to take

---

[20]For simplicity, we present our results for OLS models; our results continue to hold with logit specifications.

[21]Our results are similar using probit models.

Table 3. Multivariate analyses of early pension withdrawals

Variables	# Withdrawals	Wd/Starting balance (%)
Female (1/0)	−0.125***	6.282***
	(0.001)	(0.022)
Age (years)	0.094***	−5.567***
	(0.000)	(0.009)
Age^2/1,000	−1.032***	55.822***
	(0.002)	(0.095)
Av earnings (USD k 8/2019–4/2021)	−0.215***	−2.258***
	(0.001)	(0.025)
Density (8/2019–4/2021)	0.796***	−8.652***
	(0.001)	(0.033)
Balance (USD 10k)	0.124***	−12.338***
	(0.001)	(0.049)
Balance^2 (USD 10k)/100	−0.650***	50.290***
	(0.006)	(0.390)
Diff. in Equity (%)	−0.002***	0.070***
	(0.000)	(0.000)
Any UI (1/2020–4/2021)	0.129***	3.121***
	(0.001)	(0.020)
Any Empl Protec Bens (1/2020–4/2021)	0.077***	1.714***
	(0.001)	(0.032)
Account 2	−0.031***	−1.773***
	(0.001)	(0.035)
VPS	0.032***	−1.913***
	(0.001)	(0.033)
Deposits	−0.095***	4.031***
	(0.004)	(0.123)
Good health	0.301***	−18.658***
	(0.011)	(0.384)
Education years	0.025***	−5.885***
	(0.002)	(0.066)
Non-house savings	−0.953***	18.477***
	(0.021)	(0.767)
Financial fragility	0.292***	−50.697***
	(0.017)	(0.620)
Contributed to pension	0.188***	−16.042***
	(0.012)	(0.424)
Positive pension system image	2.093***	−111.563***
	(0.049)	(1.772)
Favors state AFP	0.167***	−20.349***
	(0.008)	(0.292)
Self-finance pension	-0.647***	28.953***
	(0.016)	(0.589)
Longevity optimistic	0.003***	−0.494***
	(0.000)	(0.008)
Constant	−0.670***	336.626***
	(0.036)	(1.338)
Observations	8,957,357	8,957,357
R^2	0.25319	0.52958
Mean dep var	2.433	63.5872

Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
Source: Authors' elaborations.

withdrawals each time, but were less likely to exhaust their balances. Having higher account balances and earning more also led to fewer withdrawals and smaller payouts relative to their starting account balances.[22] These last two findings indicate that the less well-off were more likely to pull money out, suggestive of financial hardship. On the other hand, workers who held more equity

---

[22]There is little evidence that over-saving is widespread among Chilean workers. Indeed, one of the issues noted by the 2014 Advisory Commission on the Pension System, charged with analyzing and proposing improvements for the pension system, was the prevailing low level of pension savings. The Commission reported that, while the mandatory savings rate

in their pension portfolios than the government default allocation took fewer withdrawals, but they removed a greater share of their account balances when they withdrew. Thus, there is only mixed support for the hypothesis that those confident about their own investment savvy were most likely to pull money out.

A further exploration of the financial hardship hypothesis can be explored by the effects of UI and JP benefits. We see that recipients of unemployment benefits or government employment benefits during the pandemic were *more*, rather than less, likely to take more withdrawals; they also withdrew a larger share of their pension accounts. Accordingly, there is little evidence that the social insurance programs obviated the need for Chileans to take early pension payouts. People who had saved additional money in the most liquid Account 2 were least likely to withdraw and withdrew less, the opposite of what we anticipated; conversely those holding Deposits took fewer payouts, but their payouts were larger when they did. For this reason, the evidence is mixed as to whether those with the least liquid voluntary savings were most likely to take early pension withdrawals.

Turning to the EPS variables, the results show that people living in communities with a higher fraction in good health, with higher educational attainment, where people had more positive views of the pension system, where they had heard about the Solidarity Pension, expected an AFP pension, and where people were more optimistic about survival, were all likely to have significantly more withdrawals. This seems inconsistent with the hypothesis that distrust drove withdrawals. Nevertheless, people with these same attributes took a smaller share of their accounts when they claimed early withdrawals. Conversely, in communities where people had more non-housing savings, had heard of the unemployment system, and believed that retirement should be self-financed, were less likely to take multiple withdrawals, yet they tended to take a higher percent of pension assets. Hence the evidence on the trust hypothesis is clearly mixed.

2.3 Additional results

Results obtained thus far shed some light on the role of the varying motivations people may have had when deciding whether to take early withdrawals. Specifically, we find evidence that lower earners and those with smaller initial account balances were most likely to withdraw their funds, consistent with the hardship view. Yet receiving unemployment benefits and JP benefits did not offset peoples' interest in taking early pension withdrawals.

As the incentives and motivations to make withdrawals may have changed between each of the three withdrawal opportunities, we next estimate regression models for each withdrawal period (R1, R2, R3) separately, as well as for different pension balance quartile.[23] Figure 2 shows the marginal effects of having received UI six months before each withdrawal window on the probability of withdrawing pension assets, by balance quartile and withdrawal period.[24] The top panel depicts the effects of receiving UI benefits financed from workers' own individual accounts, while the bottom panel reports the effects of benefits financed from the Solidarity Fund (payable only after the worker's individual account was exhausted). Notably, the effects are virtually nil for the top two account balance quartiles, whereas for the two lowest quartiles, there is some evidence suggesting a positive effect for both the 2nd and 3rd withdrawal periods. That is, receiving UI from one's individual account was positively associated with taking an early pension withdrawal for those participants having the smallest pension balances at the outset. This could be related to individuals attaching an option

---

in Chile was 10%, the average rate for OECD countries reached 19.6% (Comisión Asesora Presidencial sobre el Sistema de Pensiones, 2015). Moreover, the Commission also reported low levels of voluntary pension savings.

[23]For this analysis, we focus on individuals who had a positive balance in their pension savings accounts, even after making the first and/or second withdrawals. We are interested in assessing whether UI and job protection benefits helped to reduce the incentives to withdraw pension savings for this group.

[24]The marginal effects are obtained from OLS models similar to equation (1), which we run separately for different balance quartiles and for each withdrawal.
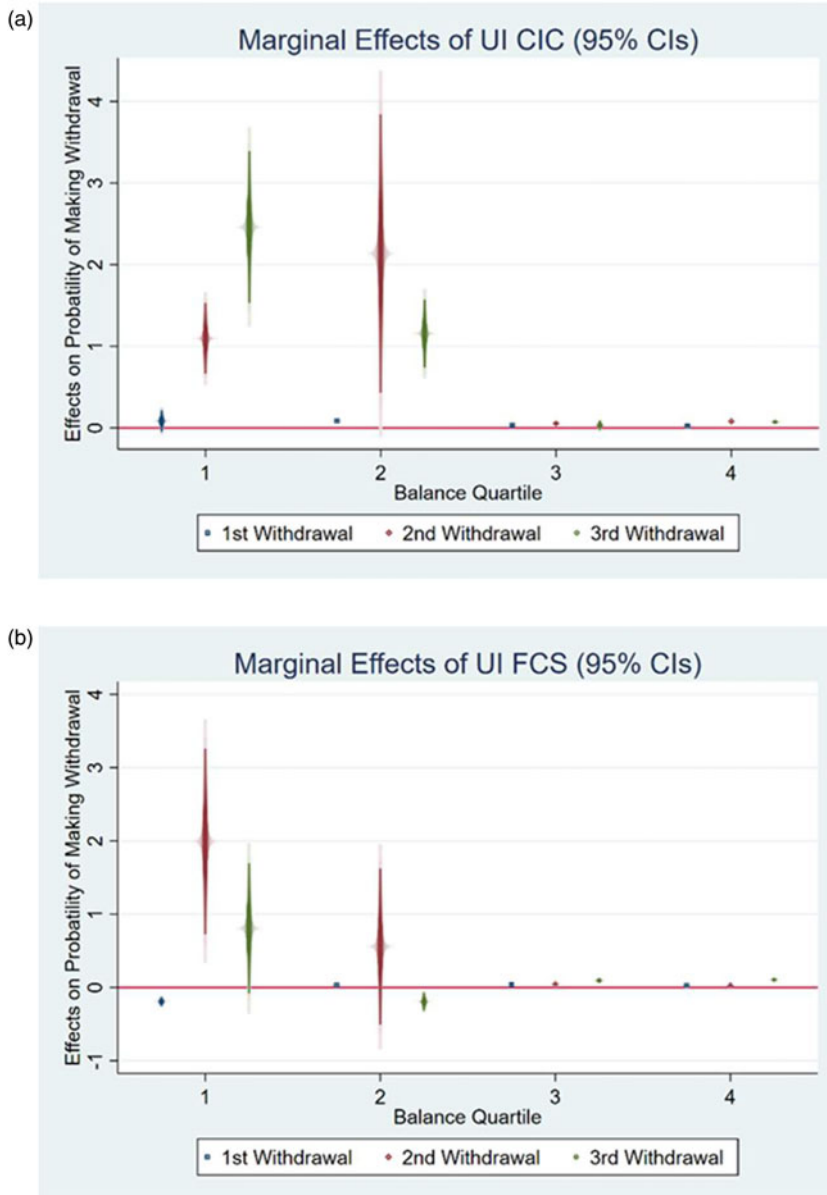
Figure 2. Effects of unemployment insurance on the probability of pension withdrawals, by withdrawal Period (R1, R2, R3) (a) Effects of unemployment insurance (Individual Account) on probability of withdrawal. (b) Effects of unemployment insurance (Solidarity Fund) on probability of withdrawal.

Notes: Panel A shows the relationship between UI benefits received from the worker's individual account on the probability of making pension withdrawals in the first, second, and third periods (R1, R2, R3, respectively), by balance quartile. Panel B shows the relationship between UI benefits received from the government's Solidarity Fund account on the worker's probability of making pension withdrawals in R1, R2, and R3, by balance quartile. Account balance quartile defined prior to R1 (constant across periods). We focus on individuals who had a positive balance in their pension accounts, even if they took the first and/or second withdrawals.

value to making withdrawals, even though they were receiving UI benefits. Since these benefits have a limited duration (five months) and are decreasing in time (see Appendix 1), it may have been attractive to insure against the possibility of UI running out before having found a new job. The second panel

shows the effects of UI benefit receipt financed from the Solidarity Fund, where once again there is again no significant relationship between UI receipt and withdrawals for the top three balance quartiles. Also, for the lowest-account workers, there is weak evidence suggesting that UI receipt did have the expected negative effect during the 1st and 3rd withdrawal periods, for the lowest and second quartiles, respectively.

Figure 3 reports the association between self-financed and Solidarity-financed JP benefits and the probability that workers withdrew their pension funds in each period, by starting balance quartile. JP benefits could be received while people were still employed, as distinct from UI benefits. Here results are insignificant for the top three balance quartiles, but for the lowest quartile, results again differ markedly. During the 1st withdrawal period, the self-financed JP benefit had the intended (negative) effect on the probability of taking out pension savings. By contrast, JP receipt lost its intended effect in R2, and once again lowered the probability of taking the third withdrawal for those in the lowest quartile. The second panel illustrates the effect of government-financed JP benefits, where again there was no effect for the top three balance quartiles. More striking is the positive effect of JP benefit receipt for the lowest quartile pension savers: the association was positive and significant for R1.

Overall, then, financial hardship appears to have been a stronger motivation for taking pension money early in the first period, particularly among those with the least in their pension accounts at the outset of Covid, but the effect declined thereafter. Moreover, in some cases, people who received JP benefits paid from their individual accounts were less likely to take early pension withdrawals, though they were less of a deterrent for government-financed benefits.

2.4 Where did the money go?

In view of the fact that so many Chileans took such a vast portion of their pension money from their accounts early, a natural question arises as to how people used these funds. Central Bank of Chile (2020) analysis reported that some of the early pension withdrawals were used for durable goods consumption, as well as for emergency spending, debt repayment, and housing; some of the money remained in household current and savings accounts by the end of 2021 (Central Bank of Chile, various years). The boost in household spending, along with high energy, food and raw material costs, generated inflationary pressures (13% annual inflation as of July 2022), which in turn prompted a contraction in monetary policy (Central Bank of Chile, 2022).

Our administrative data provides evidence regarding what happened to workers' voluntary savings accounts, as summarized in Figure 4. Here we see that net changes in the less liquid accounts were essentially uncorrelated with the three withdrawal dates (indicated by dotted vertical lines). By contrast, assets in the most liquid 'Cuenta 2' holdings did rise quite markedly immediately after each withdrawal date was announced. Moreover, those taking two or three withdrawals were most likely to move their assets to the liquid funds, suggesting that a substantial fraction of money leaving the pension system due to early withdrawals was rolled over to these more flexible savings accounts.

2.5 Likely impact on expected future pension benefits

In this section, we analyze the expected impact of Chileans' fund withdrawals on their projected future pensions. First, we model the potential impact of withdrawals for hypothetical young participants of a given age and who had a reasonable accumulated balance when the pandemic struck. Second, we construct a range of representative individuals using as reference the wage and contribution levels actually observed among Chilean pension system participants. Both of our exercises' results should be interpreted as referring to expected impacts on self-financed pensions. Indeed, as explained before, since 2022, the Chilean solidarity pillar features a flat-amount State-financed pension, the PGU, which currently equals a monthly value of approximately USD 250 (slightly above the poverty line). This benefit is targeted to almost all Chilean citizens and the benefit received is independent of any self-financed pension. Given this design, our forecasts regarding the early withdrawal effects on future pensions should be interpreted as effects on self-financed pensions.
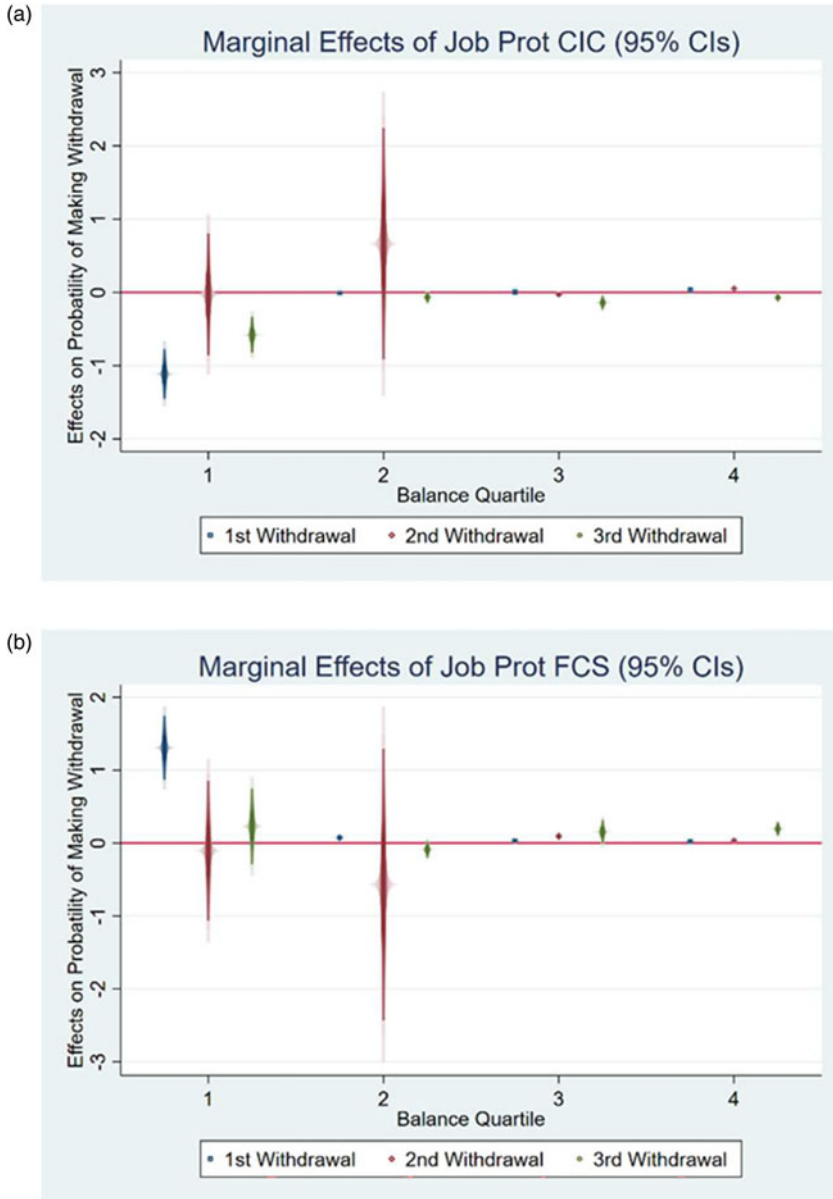
Figure 3. Effects of job protection benefits on probability of pension withdrawal, by withdrawal period (R1, R2, R3). (a) Effects of job protection (Individual Account) on probability of withdrawal. (b) Effects of job protection (Solidarity Fund) on probability of withdrawal.
Notes: Panel A shows the relationship of JP payments received from the worker's individual account on the probability of withdrawal in the first, second, and third period (R1, R2, R3, respectively), by balance quartile. Panel B shows the relationship between JP payments received from the government Solidarity Fund on the probability of withdrawal in R1, R2, and R3, by balance quartile. Account balance quartiles defined prior to R1 (constant across periods). We focus on individuals who had a positive balance in their pension savings' accounts, even if they took the first and/or second withdrawals.

For the first exercise, we focus on a hypothetical 18-year-old male with monthly earnings of US $660 (the median pay level for Chilean workers). We also assume that this individual had a full contribution density history, and his fund earned an annualized real return of 4%. The contribution rate is 10% and real wages are assumed constant. We then simulate this person's pension fund balance until

Figure 4. Voluntary saving patterns over time, by type of account. (a) change in monthly balances in pension voluntary savings accounts (APV). (b) Change in monthly balances in account 2 (CAV or Cuenta 2). (c) Change in monthly balances in agreed-on account (Agreed-on deposits).

Notes: All three savings accounts reflect voluntary saving. Individuals who make APV savings receive tax incentives, but the tax benefits must be repaid if these savings are withdrawn prior to retirement. Account 2 savings receive no tax benefits, but they can be withdrawn at any time without any penalty. Agreed-on deposits are arranged between employees and their employers; these savings have tax benefits and can only be withdrawn at retirement.

the legal retirement age (65), varying the age at which the 1st early withdrawal occurred: 18, 19, and so on. We assume that all relevant variables (contribution density, returns, earnings, etc.) remain unaltered after the withdrawal. For each case, we calculate the percentage decrease in expected self-financed pension, relative to the case in which no withdrawal occurred. This is:

$$Expected\ Fall_T = \left(\frac{Expected\ Pension_{T,Withdrawal,t} - Expected\ Pension_{T,No\ Withdrawal}}{Expected\ Pension_{T,No\ Withdrawal}} \right) \times 100 \quad (2)$$

where T is the legal retirement age (65 for males). *Expected Pension*$_{T,Withdrawal}$ is the individual's expected self-financed pension upon retirement if he made three withdrawals (the first occurring at age t (current age), and the subsequent two withdrawals taking place approximately six months apart from each other). *Expected Pension*$_{T,No\ Withdrawal}$ is the expected self-financed pension benefit at retirement if no withdrawals had been made.[25]

Figure 5 reports the results of this exercise under two different withdrawal rules. The orange line assumes that the individual made three withdrawals of 10% of his balance each time it was permitted, five months apart. Under this scenario, the future pension loss is smallest if the withdrawals occur at a young age: if the funds are taken out at age 18, future pension benefits are projected to be 0.6% lower. Conversely, for someone who cashed out at age 64, the future pension is estimated to be 27% lower. Naturally, the reason for this difference is that younger individuals will have more time to rebuild their balances (assuming that they contribute throughout their careers).

The blue line incorporates the upper and lower bounds permitted for asset withdrawals shown in Figure 1. The lower bound and the possibility that very low-balance workers could take out more than 10% increases the impact on expected pensions. Thus an 18-year-old individual permitted to take 100% of his balance will now experience an expected pension decline of almost 4%. The divergence from the orange line continues to increase as the withdrawal age rises, reaching its maximum when for withdrawals made at age 22; in this case, the expected pension declines by more than 20%. After this point, the amount withdrawn is constant in monetary terms although it falls as a percentage of the accumulated balance, resulting in less severe drops in expected pension benefits. For our parameters, if the first withdrawal were made between age 32 and 53, 10% of the balance is taken out and both the blue and orange lines coincide. After that, the upper bound becomes binding. Notably, this means that, for a 64-year-old, the drop in expected pension is now 17% (as opposed to 27% for the case with no upper bound). We suggest that the presence of a lower bound accompanied with the possibility of taking all of the existing balance is particularly damaging for people whose balance is relatively low. Moreover, the upper bound gives greater protection for expected pensions of individuals with higher account balances. In other words, the design is regressive, versus a flat 10% withdrawal rule.

For our second projection exercise, we selected representative Chilean workers' earnings and contribution densities by age and sex, which we then use to project anticipated future benefits without and with pension withdrawals (assuming that participants took the maximum permitted each time, five months apart, as before). We also assumed that real earnings would grow at 1.5% per year, and we adjust contribution density patterns accordingly to their observed values before and after the withdrawals. Results appear in Table 4.[26]

---

[25]Note that, if no withdrawals are made, the pension is a function of the future value of an annuity, since monthly savings are constant when wages and the contribution rate are fixed. If three withdrawals are made, the pension is a function of the above balance, minus the future value of the withdrawals made (i.e., including the foregone interests of the money withdrawn before retirement).

[26]We estimated contribution density patterns post-withdrawals by sex, gender, age and pre-withdrawal density levels. We then computed *Years balance*, or the number of years that it would take for workers' balances to regain their pre-withdrawal levels. The *Years pension* refers to the number of years by which individuals would have to delay retirement for their projected self-financed pension to equal what they would have had with no withdrawals. We also computed the *Projected Pension 0 Wd/Poverty* which refers to the ratio of projected self-financed pensions to the poverty line if no withdrawals had been made,
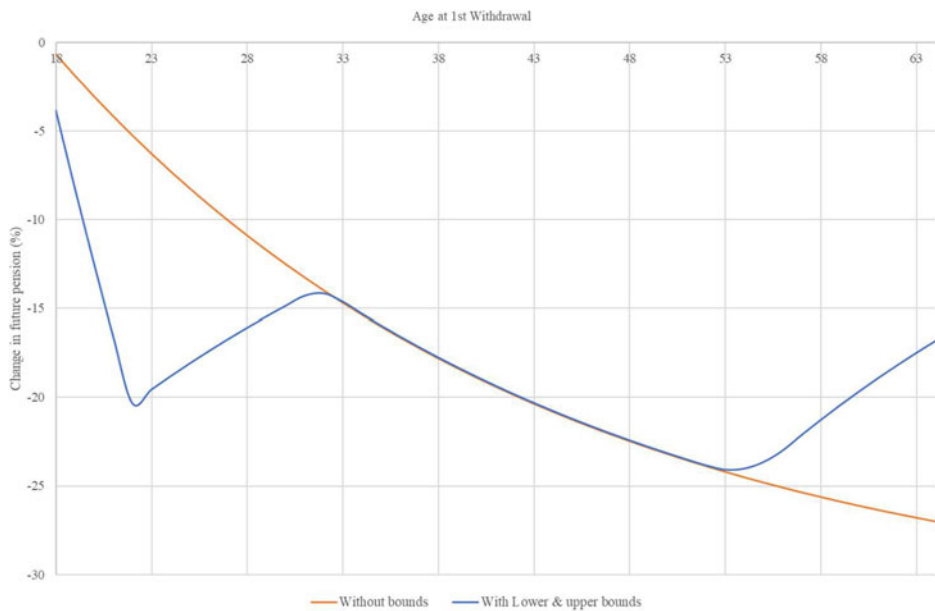
Figure 5. Expected reductions in self-financed pension benefits for representative individuals (%).
Source: Authors' elaboration. Note: The figure shows the expected drop in future self-financed pension benefits for individuals taking early withdrawals at different ages (from age 18–64). Assumes constant real wage and monthly contributions from that age to retirement. The orange line shows the percentage change in expected pension benefit by age at the time of the first withdrawal, assuming that three withdrawals were taken. Each withdrawal is set at 10% of the pension savings' balance. Pension benefit changes calculated comparing the final pension versus the pension that would have been received if no withdrawals had occurred. The blue line assumes the lower and upper bounds were in place; hence balances below US $1,400 could be fully withdrawn, while those with balances over $62,000 were limited to withdrawals of $6,200.

A first conclusion is that older workers' pension benefits would be projected to decline the most due to the early withdrawals, especially for the lowest paid and for those with the lowest contribution densities. Indeed, for those currently 55–65 (men) and 55–60 (women), projected benefits would be anticipated to drop by over 70%. This shortfall could be made up with 11 more years of work for the men, and 8.5 years of additional work for the women – well beyond the current normal retirement ages. Men and women age 45–55 with the lowest contribution density are expected to experience an estimated pension cut of 50% (for men; 54% for women). Projected drops are smaller for younger workers, but still, benefits for those age 35–45 would still be projected to fall by 23% for men and 28% for women in the lowest quartile. For the youngest group, age 16–25, pension benefits are forecasted to shrink by 16% for the highest paid men (18.9% for women) due to the early withdrawals.

The impact of the early withdrawals on wellbeing can be evaluated by focusing on the last two columns of Table 4, where we compare the projected self-financed pension for each group to the poverty line, without and with the early withdrawals.[27] A value less than one indicates that the projected pension benefit would be anticipated to fall below the poverty line. One clear finding is that the lowest-paid group in each category would have been anticipated to have a projected benefit below the poverty line *even without any withdrawals*; this reality prompted the government's move to offer Solidarity pensions (Pillar I) under the Bachelet government. A second important finding appears in the rows indicated with an asterisk: here we see that people in these groups (2 and 11 for men, 6 for

and *Projected Pension 3 Wd/Poverty* refers to the ratio of projected self-financed pensions to the poverty line assuming three withdrawals. See Table A3 for additional detail.

[27]The Ministry of Social Development and Family (2022) set the per capita poverty line at 200,000 Chilean pesos per month (approximately USD$242 US dollars) for May 2022.

Table 4. Expected self-financed pension benefit reductions due to early pension withdrawals, number of years required to make up shortfall, and years retirement would need to be delayed to make up shortfall

Group	N	Age	Density (pre)	Density (post)	Pre earnings (median)	Pre balance (median)	Pension fall (%)	Years balance	Years pension	Proj pension 0 wd /Poverty	Proj pension 3 wd /Poverty
A. Males
1	148,252	16 to 25	0.1852	0.8452	197,660	60,030	−3.7	0.2	0.8	0.71	0.69
2	297,953		0.4211	0.6911	331,100	467,867	−8.7	1.5	1.1	1.03	0.94
3	149,480		0.7313	0.6213	452,428	1,387,428	−16.1	3.6	2	1.38	1.15
4	321,503	25 to 35	0.3390	0.6790	373,335	551,232	−9.8	1.6	1.2	0.87	0.79
5	642,829		0.6028	0.7028	524,696	3,705,724	−21.4	4.8	3.0	1.60	1.25
6	328,172		0.8188	0.6888	729,973	7,065,442	−14.1	2.8	2.0	2.40	2.07
7	267,017	35 to 45	0.3922	0.5722	389,583	2,041,466	−23.4	6.3	2.9	0.48	0.37
8	534,288		0.6582	0.6982	656,768	10,636,436	−14.4	2.5	2.0	1.60	1.37
9	280,638		0.8421	0.7221	963,726	18,414,646	−14.6	2.6	2.0	2.60	2.22
10	257,953	45 to 55	0.3633	0.4833	376,250	3,492,446	−48.9	9.1	6.0	0.32	0.16
11	515,960		0.6583	0.6583	594,916	18,185,848	−20.3	3.7	2.8	1.24	0.99
12	277,100		0.8543	0.7443	877,600	33,564,226	−20.8	3.8	3.0	2.24	1.77
13	205,101	55 to 65	0.3086	0.3886	363,493	3,495,534	−71.0	11.1	8.0	0.15	0.04
14	410,401		0.6411	0.6111	506,281	23,166,008	−25.0	4.6	3.3	0.87	0.65
15	218,504		0.8636	0.7436	778,161	45,801,158	−24.9	4.6	3.3	1.71	1.28
B. Females
1	124,253	16 to 25	0.1212	0.7412	157,500	41,891	−4.0	0.2	0.8	0.29	0.27
2	250,807		0.2963	0.5463	259,318	250,199	−8.5	1.3	1.1	0.36	0.33
3	125,326		0.6154	0.4954	394,034	1,072,161	−18.6	3.9	2.7	0.56	0.46
4	310,036	25 to 35	0.2249	0.5249	267,072	247,544	−9.4	1.3	1.2	0.27	0.24
5	620,065		0.4857	0.5857	492,614	2,408,944	−27.0	5.8	3.8	0.69	0.50
6	315,542		0.7571	0.6471	683,343	5,676,175	−17.7	3.4	2.5	1.19	0.98
7	264,963	35 to 45	0.2218	0.3418	301,000	635,436	−27.7	4.4	3.2	0.12	0.09
8	529,956		0.5097	0.5297	514,060	5,967,352	−27.2	5.1	3.8	0.53	0.39
9	277,250		0.7835	0.6735	877,844	15,341,880	−15.6	2.5	2.0	1.26	1.07
10	257,605	45 to 55	0.1506	0.2306	288,660	721,002	−54.1	7.2	5.8	0.05	0.02
11	515,217		0.4060	0.3860	428,403	7,080,932	−34.3	6.3	4.9	0.28	0.19
12	272,796		0.7278	0.6078	758,809	24,470,018	−22.4	3.9	3.0	0.94	0.73
13	113,873	55 to 60	0.1039	0.1539	257,380	525,853	−74.4	8.5	7.0	0.02	0.01
14	227,754		0.3402	0.2902	390,000	6,542,982	−42.3	8.2	6.0	0.19	0.11
15	120,458		0.6921	0.5621	650,446	26,707,523	−25.0	4.5	3.7	0.76	0.57

Notes: Projections assume 1.5% annual real earnings growth. Contribution density after withdrawals is estimated from data on groups by gender, age, and pre-withdrawal density. Years balance: number of years it would take for each illustrative individual's balance to return to its pre-withdrawal level. Years pension: number of years the individual would need to delay retirement for projected self-financed pension to be equal to that if no withdrawals had been made. Projected Pension 0 Wd/Poverty refers to the ratio of projected self-financed pensions to the poverty line if no withdrawals had been made, and Projected Pension 3 Wd/Poverty refers to the ratio of projected self-financed pensions to the poverty line assuming three withdrawals. For additional detail see Appendix 3.
Source: Authors' elaborations.

women) who took maximum withdrawals would move from a pension above to below the poverty line, due to the early withdrawals. Third, even the highest paid of each age group among women is seen to be quite financially fragile, as they are anticipated to have pension benefits below the poverty line with maximal withdrawals in all but one case. Based on these results, it appears that the early pension withdrawal program has regressive effects, cutting future pensions the most for workers earning lower wages and having lower contribution density. Moreover, as these individuals may be more likely to qualify for receiving non-contributory Solidarity benefits in the future, the resulting increased fiscal cost must be carefully considered.[28]

While our analysis benefits from the fact that we have merged pension system information with individual-specific data on unemployment and job support data, the dataset does not include information on other possible sources of income and savings outside the pension system. For instance, we lack data on the informal labor market and whether this might have taken up the slack for low earnings and the unemployed during the peak of the pandemic. Nevertheless, this seems unlikely in view of labor market surveys during that period (Vergara, 2021; Romero, 2022). Additionally, the evidence suggests that the large rise in government social insurance benefits occurred much later than did the pension withdrawals (Central Bank of Chile, 2021).

3. Conclusions and implications

During the pandemic, policymakers around the world expressed deep concern about the granting of early access to pension assets intended for retirement. For instance, the OECD (2020: np) noted that '[t]he impact of granting universal access to retirement pots on future retirement income is potentially significantly larger than the impact of stopping contributions. The reduction in retirement income resulting from allowing a 10% withdrawal over a year could vary from 2% to 9% depending on the length of the contribution horizon, with older people experiencing a larger impact because they may have accumulated larger balances to withdraw income from.' Nevertheless, few studies have had access to high-quality administrative records that we have here, permitting the assessment of such early withdrawals on actual worker behavior and potential retirement outcomes. Our analysis of Chile's experience clearly shows that a majority of system participants opted to take advantage of the opportunities to withdraw their pension money early.

As for the factors driving this behavior, we examined *(H1)* whether those who took early pension withdrawals did so due to economic hardship. Evidence on this point is mixed, however. Our multivariate analysis showed that those with lower pension balances who contributed less took more withdrawals and a larger percentage of their account balances. Therefore, this affords some confirmation of the link between early pension withdrawals and financial hardship. We also found that those with the smallest pension balances who received unemployment benefits during the pandemic took more withdrawals and a higher fraction of their initial pension balances. In this sense, those withdrawing early pensions were evidently more financially needy than those who did not. In the case of JP benefits, people with lower pension balances did generally take less from their pensions. Moreover, people living in more financially fragile communities took more withdrawals, though they withdrew a smaller percentage of their accounts.

It is possible, of course, that an additional mechanism could have been at work. Low-income workers could have anticipated that the means-tested and government-provided Solidarity benefit would likely compensate them for their early withdrawals.[29] Moreover, the passage of the PGU at the end of the pandemic now promises citizens a much larger flat-benefit state-financed pension (around US$250 monthly), reinforcing this incentive.

Regarding the evidence on *(H2)*, we evaluated the role of distrust in the system as a rationale for early pension withdrawals. We documented that plan participants living in communities with a higher

---

[28]Our future work will examine the potential impact of these changes on solidarity benefit program costs.

[29]In fact, almost 40% of Chileans were aware of the Solidarity benefit system, according to the 2015 EPS (authors' calculations).

proportion in good health, higher educational attainment, more positive views of the pension system, where they had heard about the Solidarity Pension, and expected an AFP pension, tended to have significantly higher numbers of withdrawals but lower withdrawal rates as a percent of their starting balances. We also showed that, in communities where more people had non-house savings, had heard of the unemployment system, and believed that retirement should be self-financed, participants were less likely to take withdrawals, yet they took a larger share of their pension assets when they did withdraw. We also found that participants who had saved in their Voluntary Pension Accounts (APVs), managed by the same AFPs as the workers' pension accounts, took fewer early withdrawals but took a larger share of the accounts when they did. In other words, the evidence is mixed regarding the distrust hypothesis.

Turning to *(H3)*, we discover that participants who held more equity than the government-defaulted equity share were less likely to take early pension withdrawals, but if they did, they took a larger share of their account balances. This may indicate that people believing they were financially savvy were more eager to pull the money out, to invest differently from the default. Regarding *(H4)*, we hypothesized that pessimism regarding old-age survival might have prompted more and a larger share of early withdrawals. Yet here again, the evidence is mixed. Our multivariate analysis shows that withdrawals were more likely in regions with above-average survival expectations, but optimism regarding longevity was associated with withdrawing a smaller share of account balances.

We also showed that the withdrawal design used, with lower and upper monetary bounds on withdrawals, resulted in heterogeneous withdrawal patterns. Pension benefits will be more adversely affected for workers with lower wages and a lower density of contributions including younger individuals and women. Germane to future pension payouts will be how people contribute to their accounts in the future, what investment returns prove to be, and when people claim their benefits. Additionally, an open question remains as to how the government will finance the new social insurance benefits it recently launched, and how successful this policy will be in covering peoples' retirement income shortfalls.

The fact that such a large portion of pension assets in Chile was withdrawn early and used for purposes other than retirement, as well as the regressive effects of this policy, suggest that some pension redesign could be warranted. For instance, could be of interest to inquire how the pension system could be reformed so that such events would not recur, or would be less likely to occur in the future. International experience offers some useful insights. One approach could be to grant early access to pension funds only under more stringent rules (e.g., the need to demonstrate economic hardship, terminal illness, pay down mortgages, etc.). Repayments of amounts withdrawn could also be required to avoid facing considerable tax penalties (such as in the US). Another innovative example is offered by the U.K. 'sidecar' model by Nest Insight (Phillips *et al.*, 2021, 2022): this program combines a liquid emergency savings account with a traditional DC pension (Hallez, 2021). Drawing on lessons from behavioral economics, the approach uses payroll deduction, pre-commitment features, and worker inertia to create emergency savings, while at the same time increasing illiquid retirement savings invested with a long-term time horizon.[30] Naturally, this requires establishing and supervising an institutional framework to help create and manage such rainy-day emergency accounts. In sum, the pandemic experience has clearly demonstrated that protecting pension assets is critical for retirement security.

---

[30]For recent references on this point, see John (2021); Fuentes *et al.* (2020); Phillips *et al.* (2021); and Sabat and Gallagher (2020).

References

Amromin G and Smith P (2003) What explains early withdrawals from retirement accounts? Evidence from a panel of tax-payers. *National Tax Journal* **56**, 595–612.

Arenas de Mesa A, Bravo D, Behrman JR, Mitchell OS and Todd PE (2008) The Chilean pension reform turns 25: Lessons from the social protection survey. In Kay S and Sinha T (eds), *Lessons From Pension Reform in the Americas*. Oxford: OUP, pp. 23–58.

Argento R, Bryant VL and Sabelhaus J (2015) Early withdrawals from retirement accounts during the great recession. *Contemporary Economic Policy* **33**, 1–16.

Bateman H, Campo R, Constable D, Dobrescu I, Goodwin A, Liu J, Newell BR and Thorp S (2020) 20 K now or 50 K later? What's Driving People's Decision to Withdraw their Super? CEPAR Working Paper August.

Beshears JL, Choi JJ, Laibson DI, Madrian B and Sakong J (2012) Self-Control and Liquidity: How to Design a Commitment Contract. RAND Working Paper Series WR- 895- SSA. https://dx.doi.org/10.2139/ssrn.1970039

Bryant VL, Holden S and Sabelhaus J (2011) Qualified Retirement Plans: Analysis of Distribution and Rollover Activity. Wharton Pension Research Council Working Paper No. 165.

Butrica B, Zedlewski SR and Issa P (2010*a*) Are Early Withdrawals from Retirement Accounts a Problem? EBRI Issue Brief No. 27. Available at https://www.urban.org/sites/default/files/publication/28711/412108-Are-Early-Withdrawals-from-Retirement-Accounts-a-Problem-.PDF

Butrica B, Zedlewski SR and Issa P (2010*b*) Understanding Early Withdrawals from Retirement Accounts." Urban Institute Discussion Paper. Available at https://www.urban.org/sites/default/files/publication/28706/412107-Understanding-Early-Withdrawalsfom- Retirement-Accounts.PDF

Central Bank of Chile (2020) Proyecto de reforma constitucional referido a permitir un segundo retiro de fondos de pensiones. Available at https://www.bcentral.cl/documents/33528/133214/mmc18112020.pdf/97b71f4f-970c-3895-4f1c-75eba27297a9?t=1605715874763

Central Bank of Chile (2021) Banco Central publicó Informe de Política Monetaria (IPoM) de Diciembre de 2021. Available at https://www.bcentral.cl/contenido/-/detalle/banco-central-publico-informe-de-politica-monetaria-ipom-de-diciembre-de-2021

Central Bank of Chile (2022) Monetary Policy Report, June 2022. Informe de Política Monetaria junio 2022 – Banco Central de Chile (bcentral.cl).

Central Bank of Chile (various years) Monetary Policy Reports 12/2021, 09/2021, 06/2021, and 03/2021. Available at https://www.bcentral.cl/web/banco-central/areas/politica-monetaria/informe-de-politica-monetaria

Comisión Asesora Presidencial sobre el Sistema de Pensiones (2015) *Informe Final, Comisión Asesora Presidencial Sobre el Sistema de Pensiones.* Santiago, Chile. Available at http://comision-pensiones.cl

Cumbo J (2020) OECD Warns against Using Pension Assets for 'Pet Projects'. Bloomberg, FT.com, 12–23.

Dominguez C and Pierola G (2021) El 40% de Afiliados Quedaría con $0 de Saldo en su AFP con el Tercer Retiro. 28 Febrero. Available at https://www.pauta.cl/economia/tercer-retiro-afp-afiliados-10-pensiones

Engelhardt GV (2002) Pre-retirement lump-sum pension distributions and retirement income security: evidence from the health and retirement study. *National Tax Journal* **55**, 665–684.

Fernandez V and Villatoro F (2020) Retirement Funds Early Access During a Pandemic Impact on Financial Markets, IPRA Special Session, 28th Colloquium of Pensions & Retirement Research.

Fong J, Koh B and Mitchell OS (2020) Trust and retirement behavior: evidence from Singapore. *Journal of the Economics of Ageing* **18**, 100283. doi: 10.1016/j.jeoa.2020.100283

Fuentes O, Garcia M and Lopez F (2020) Nest Sidecar Savings Trial: Lecciones para Chile de la Estrategia de "Frascos" para Promover el APV en el Reino Unido. DOI https://doi.org/10.11565/gesten.v5i1.108

Fuentes O, Quintanilla X, Rueda A, Salvo E, Herrera D and Toledo M (2021) Retiro de Fondos de Pensiones: resultados y Efectos. Diciembre. Documento de Trabajo N 67. Available at https://www.spensiones.cl/portal/institucional/594/articles-15164_recurso_1.pdf

Garabato N (2016) Financial literacy and retirement planning in Chile. *Journal of Pension Economics & Finance* **15**, 203–223.

Guerrero F (2021) 'Pablo Antolin, Experto en Pensiones de la OCDE: "El Pilar Solidario es una pensión básica universal."' LaTercera.com. Available at https://www.latercera.com/pulso/noticia/pablo-antolin-experto-en-pensiones-de-la-ocde-el-pilar-solidario-es-una-pension-basica-universal/PODUXDMB6FDS7N4JUU65TRZCCU/

Hallez E (2021) Shared Emergency Accounts could Hint at Higher Savings. Investmentnews.com.

Hurwitz A, Mitchell OS and Sade O (2022) Testing methods to enhance longevity awareness. *Journal of Economic Behavior and Organization* **204**, 466–475.

Instituto Nacional de Estadísticas (2020) Boletín Estadístico: Empleo Trimestral. No. 262. August 2020. Available at https://www.ine.gob.cl/docs/default-source/ocupacion-y-desocupacion/boletines/2020/pa%C3%ADs/bolet%C3%ADn-empleo-nacional-trimestre-m%C3%B3vil-mayo-junio-julio-2020.pdf?sfvrsn=b6bcfa71_4

International Monetary Fund (2021) Database of Fiscal Policy Responses to Covid-19, July 2021. Available at https://www.imf.org/en/Topics/imf-and-covid19/Fiscal-Policies-Database-in-Response-to-COVID-19

John D (2021) Building, and Using, Emergency Savings Helps to Create Lifetime Financial Security. Aarp.org.

Lee ST and Hanna SD (2020) Financial knowledge, overconfidence, and early withdrawals from retirement accounts. *Financial Planning Review*. doi: 10.1002/cfp2.1091

Lopez F and Rosas G (2022) Covid-19 and attitudes toward early withdrawal of pension funds: the role of trust and political ideology. *Journal of the Economics of Ageing* 23, 100420.

Lorca M (2021) Effects of Covid-19 early release of pension funds: the case of Chile. *Journal of Risk and Insurance* 88, 903–936.

Lusardi A and Mitchell OS (2014) The economic importance of financial literacy: theory and evidence. *Journal of Economic Literature* 52, 5–44.

Lusardi A, Mitchell OS and Curto V (2010) Financial literacy among the young: evidence and implications for consumer policy. *Journal of Consumer Affairs* 44, 358–380.

Madeira C (2022) The impact of the Chilean pension withdrawals during the Covid pandemic on the future savings rate. *Journal of International Money and Finance* 126, 102650. https://doi.org/10.1016/j.jimonfin.2022.102650

Mander B and Stott M (2020) Chile's Famed Pensions Systems Faces an Existential Crisis. FT.com, Nov. 15. Chile's famed pensions system faces an existential crisis | Financial Times (ft.com).

Marusic M (2021) Retiros del 10% de las AFP También Golpean Tasa de Reemplazo de las Pensiones: El Impacto en Hombres y Mujeres. La Tercera. 3-8.

Ministry of Social Development and Family (2022) Canasta Básica de Alimentos de Septiembre 2022. Ministerio de Desarrollo Social y Familia – Gobierno de Chile.

Mitchell OS (2021) Building Better Retirement Systems in the Wake of the Global Pandemic. NBER WP 27261.

O'Connell A (2011) How long do we expect to live? A review of the evidence. *Population Aging* 4, 185–201.

O'Dea C and Sturrock D (2023) Survival pessimism and the demand for annuities. *Review of Economics & Statistics* 105(2), 442–457. https://doi.org/10.1162/rest_a_01048

OECD (2020) Retirement Savings in the Time of Covid-19. Report of the Working Party on Private Pensions. Available at https://www.oecd.org/coronavirus/policy-responses/retirement-savings-in-the-time-of-covid-19-b9740518/

Phillips J, Kuipers A and Sandbrook W (2021) Supporting Emergency Saving. Nest Corporation. nestinsight.org.uk.

Phillips J, Kuipers A, Cremin A and Sandbrook W (2022) Payroll Saving Behaviors: Learning from the UK Sidecar Savings Trial. NEST Insight. Research Library PDF Viewer – NEST Insight Unit.

Poterba J, Venti S and Wise D (1999) Pre-Retirement Cash-outs and Foregone Retirement Saving: Implications for 401(k) Asset Accumulation. NBER Working Paper No. 7314. Cambridge, MA.

Romero T (2022). Informal Employment As a Percentage of Total Employment in Chile from 2018 to 2021. Statista.com Chile: informal employment share 2021 | Statista.

Sabat J and Gallagher EA (2020). Does Short-Term Emergency Savings Translate into Long-Term Financial Wellness? AARP Research Report, November.

Sabelhaus J and Weiner D (1999) Disposition of lump–sum pension distributions: evidence from tax returns. *National Tax Journal* 52, 593–613.

Social Security Administration (SSA) (2020) International Update: Recent Developments in Foreign Public and Private Pensions. December.

Superintendencia de Pensiones, Chile (2019*a*) Inversión de los Fondos de Pensiones. Cuarto trimestre 2019. Available at https://www.spensiones.cl/portal/institucional/594/articles-13915_recurso_1.pdf

Superintendencia de Pensiones, Chile (2019*b*) Ficha Estadística Previsional. Diciembre 2019. Available at https://www.spensiones.cl/portal/institucional/594/articles-13819_recurso_1.pdf

Vergara E (2021) UN Finds Soaring Poverty in Virus-hit Latin America. APNews. UN finds soaring poverty in virus-hit Latin America region | AP News.

Wang-Ly N and Newell BR (2022) Allowing early access to retirement savings: lessons from Australia. *Economic Analysis and Policy* 75, 716–733.

Appendix 1. The unemployment insurance system and labor protection measures

The Chilean Unemployment Insurance (UI) system combines individual accounts and a Solidarity Unemployment Fund. Participation in the UI system is compulsory for private dependent workers (covered by the labor code) who initiated or restarted labor contract coverage since October 2002. Self-employed workers and public employees are not covered by UI. The UI program is managed by a private entity selected by a public tender based on administration fees. The public tender takes place every 10 years.

The UI program has two components: self-insurance through unemployment individual accounts, and social insurance through the Solidarity Unemployment Fund. Total contributions to the UI scheme amount to 3% of the worker´s earnings. The 3% is split to finance the individual account and the Solidarity Unemployment Fund. Both employers and employees pay contributions to the funds.

Table A1. Variables names and definitions

Variable	Variable definitions
R1	1 if took early withdrawal during period 1, 0 else
R2	1 if took early withdrawal during period 2, 0 else
R3	1 if took early withdrawal during period 3, 0 else
# Withdrawals	Number of withdrawals across all 3 period
Withdrawal/Starting balance (%)	% of total balance withdrawn across all 3 periods
Female	1 = yes, else 0
Age	in years
Balance (USD MM)	Balance in pension account prior to July 2020
Density (overall)	% of time contributed to individual account since joining pension system to July 2020
Diff. in equity (%)	% equity in retirement account minus default %, June 2020 (or nearest month available)
Av Earnings USD 8/2019–7/2020	Av monthly earnings August 2019–July 2020 (USD)
Any UI 8/2019–7/2020	1 if any UI benefit received August 2019–July 2020, 0 else
Any Empl Protec Bens 1/2020–7/2020	1 if any employment protection benefit received January-July 2020, 0 else
Account 2	1 if average balance in Account 2 savings account positive October 2019–July 2020, 0 else
VPS	1 if average balance in voluntary pension savings account positive October 2019–July 2020, 0 else
Deposits	1 if average balance in Agreed-On savings account positive October 2019–July 2020, 0 else
2015 EPS regional variables	
Good health	% Excellent/VG/Good
Education years	Av years of educ
Non-house savings	% have savings outside home
Financial fragility	% financially fragile (cannot raise half a year of HH income in a month)
Contributed to pension	% ever contrib to pension in lifetime
Expect AFP	% expect AFP benefit in old age
Heard about PBS	% ever heard about PBS benefit
Heard about UI	% ever heard of UI system
Self-finance pension	% agree each person should self-finance retirement
Positive AFP Image	% with positive image of AFP system
positive pension system image	% with positive image of Chilean pension system
Favors state AFP	% would contribute to a state-run AFP
Longevity optimistic	% expect to live > life table

Source: Authors' elaborations.

Individual accounts are financed by contributions from both workers and employers. In the case of workers with open-ended employment contracts, the worker and employer contributions are 0.6% and 1.6% of the worker's earnings, respectively.[31] In the case of workers with fixed-term contracts, the contribution is paid only by the employer, in an amount equal to 2.8% of the worker´s earnings.

The Solidarity Unemployment Fund finances unemployment benefits when individual savings are inadequate or become exhausted. Eligibility conditions under this program are more stringent than for the former. Individuals eligible for Solidarity benefits receive not only unemployment benefits, but also pension contributions during the period the individual is receiving UI payments. The contribution is 10% of the unemployment benefit. The Solidarity Unemployment fund is financed by employer contributions plus an annual state contribution of CLP 12 bn (USD 14 million). The employer contribution amounts to 0.8% of pay for open-ended contract workers, and 0.2% for workers with fixed-term contracts.

Unemployment benefits are payable conditional on a minimum number of contributions having been made during the period before becoming unemployed. Unemployment benefits depend on the level of savings in the individual account and the labor earnings received before becoming unemployed, as the benefits are determined as a replacement rate with respect to monthly labor earnings. To access the Solidarity Unemployment benefits, the worker must also satisfy additional conditions: the employment relationship must not have ended on grounds attributable to the worker, resources in the individual account must be insufficient to finance the payments, the worker must not have received more than 10 payments within the last five years financed by the Solidarity unemployment fund, and the worker must be registered and certified in the National Employment Portal Registry (Bolsa Nacional de Empleo[32]).

---

[31]There is an upper earnings limit of UF 122.6 (USD 4,462).

[32]https://www.bne.cl/

Table A2. Descriptive statistics

Variable	P50	Mean	St dev
R1	1	0.96	0.19
R2	1	0.79	0.41
R3	1	0.68	0.47
# Withdrawals	3	2.43	0.88
Withdrawal (USD)	3,817.81	4,302.15	3,864.07
Withdrawal/Starting balance (%)	51.12	63.58	39.72
Withdrawal/Adj. Earnings (%)	5.49	6.56	5.99
Female (1/0)	0	0.47	0.5
Age (years)	40	40.89	11.82
Av earnings (USD 8/2019–4/2021)	234.99	504.99	673.49
Density (8/2019–7/2020)	0.57	0.51	0.46
Balance (USD)	6,424.71	14,722.46	23,401.56
Diff. in Equity (%)	0	3.91	17.34
Any UI (1/2020–4/2021)	0	0.08	0.28
Any Empl Protec Bens (1/2020–4/2021)	0	0.06	0.23
Account 2	0	0.06	0.24
VPS	0	0.08	0.27
Deposits	0	0.01	0.08
% Good health	0.66	0.65	0.04
Education (av. years)	12.53	12.26	0.4
Have non-house savings (%)	0.13	0.12	0.02
Av Financial Fragile (%)	0.72	0.71	0.03
Contributed to pension (%)	0.87	0.86	0.04
Positive re pension system (%)	0.08	0.09	0.02
Positive image of AFP (%)	0.05	0.06	0.02
Favors state AFP (%)	0.6	0.58	0.07
Heard about PBS (%)	0.36	0.38	0.06
Heard about UI (%)	0.74	0.7	0.06
Self-finance pension (%)	0.31	0.32	0.03
Expect AFP (%)	0.55	0.52	0.05
Longevity optimistic (%)	−22.25	−22.27	1.83
N = 8,957,357			

Source: Authors' elaborations.

The requirements in terms of number of contributions are determined by the type of labor contract and the UI fund accessed. To receive benefits from the individual account fund, an unemployed worker must have contributed at least 12 of the past 24 months (for open-ended contract workers) or at least 6 of the past 24 months (for fixed-term workers). Benefit amounts start at 70% of average pay over the prior six months, i.e., payable at a 70% replacement rate for the first month of unemployment; the rate then declines to 55%, 45%, 40%, 35%, and 30% until the account balance is exhausted. To access benefits from the Solidarity Unemployment fund, an unemployed worker must have contributed at least 12 of the past 24; moreover, the last three contributions should be continuous and with the same employer. The Solidarity Unemployment fund provides for a maximum of 5 (3) monthly payments for open-ended contract workers (fixed-term workers). For fixed-term workers, the benefit amounts begin at a 50% replacement rate, decreasing to 40% and 35% for the second and third payments. Benefit amounts have a maximum cap and a minimum level ranging between CLP 728.000 (USD 855) and CLP 109.000 (USD 128) for open-ended contract workers, and from CLP 520.000 (USD 611) to CLP 109.000 (USD 128).

Total affiliates to the unemployed insurance amount to more than 11 million workers. Almost half of them (48%) contribute to the UI funds. Monthly approved applications to the UI program run close to 70,000 and the monthly average number of beneficiaries is close to 140,000.[33]

Recent transitory and permanent changes to the UI scheme

During the pandemic, there were several governmental efforts to support employment and households. The 2020 Labor Protection Law introduced job retention schemes in which the employment relationship could be suspended in those areas with lockdowns. A suspension was also possible by agreement between an employer and its workers when the activity was affected, totally or partially by the pandemic. Additionally, the law established the option to temporarily suspend working contracts and get UI benefits for parents taking parental leave or who were taking personal care of children born after 2013, who due to the pandemic were not attending school. In all these cases, employers continued paying social security and health contributions and the workers received

---

[33]As noted above, civil servants, self-employed, and informal workers are not covered by the UI benefits.

Table A3. Characteristics of illustrative workers for projected self-financed pension estimates

Group	Age	Density	Dens. Pre	Dens. post	Change dens
A. Males					
1	16–25	Low	0.0360	0.6920	0.6560
2	16–25	Medium	0.4915	0.7618	0.2703
3	16–25	High	0.9710	0.8644	−0.1066
4	25–35	Low	0.0238	0.3659	0.3422
5	25–35	Medium	0.5332	0.6377	0.1045
6	25–35	High	0.9795	0.8514	−0.1281
7	35–45	Low	0.0149	0.1926	0.1777
8	35–45	Medium	0.5242	0.5636	0.0394
9	35–45	High	0.9824	0.8634	−0.1190
10	45–55	Low	0.0111	0.1297	0.1186
11	45–55	Medium	0.5228	0.5261	0.0033
12	45–55	High	0.9846	0.8699	−0.1147
13	55–65	Low	0.0080	0.0870	0.0791
14	55–65	Medium	0.5197	0.4906	−0.0291
15	55–65	High	0.9865	0.8622	−0.1243
B. Females					
1	16–25	Low	0.0322	0.6560	0.6238
2	16–25	Medium	0.4794	0.7272	0.2477
3	16–25	High	0.9759	0.8600	−0.1159
4	25–35	Low	0.0181	0.3191	0.3010
5	25–35	Medium	0.5243	0.6263	0.1020
6	25–35	High	0.9841	0.8694	−0.1147
7	35–45	Low	0.0099	0.1337	0.1238
8	35–45	Medium	0.5236	0.5448	0.0211
9	35–45	High	0.9856	0.8755	−0.1102
10	45–55	Low	0.0068	0.0824	0.0756
11	45–55	Medium	0.5160	0.4994	−0.0166
12	45–55	High	0.9868	0.8710	−0.1158
13	55–65	Low	0.0052	0.0519	0.0467
14	55–65	Medium	0.5188	0.4640	−0.0548
15	55–65	High	0.9887	0.8635	−0.1252

Source: Authors' elaborations. See text.

benefits from the UI. These benefits were financed primarily with the resources in the individual accounts; once they were exhausted, continued benefits were paid via the unemployment Solidarity fund under certain eligibility conditions.

A different alternative to contract suspension was provided, in which employers could agree with their workers individually or collectively the reduction of up to 50% of the monthly working hours, with a reduction in monthly wages up to 75% of normal salary (50% paid by the employer and 25% paid by the UI funds). Also, in this case employers continue paying social security and health contributions. Both types of measures, labor contract suspensions and working hours reductions were in effect between July 2020 and October 2021.