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Abstract

There are currently an estimated twenty nine and a half thousand primary dwelling mortgage loans in arrears of more than one year in Ireland. These unresolved cases are a legacy of the pre-COVID era, with most arrears beginning during the previous crisis. It remains a priority for the affected borrowers, lending institutions, and the wider Irish financial system that policy solutions are found for these cases. The appropriate solutions will vary depending on the financial circumstances and level of engagement of borrowers. In this *Note* we use granular information on a sample of long term mortgage arrears borrowers to highlight the financial vulnerability and repayment capacity among borrowers who have previously engaged with a retail bank. We link these findings to the suite of potentially available solutions for distressed debt resolution that might be required. A cohort-based approach will be required, with no "one-size-fits-all" solution likely, given the variation in financial situation across the sample.

1 Introduction

Over ten years on from the Global Financial Crisis, long-term mortgage arrears (in this paper, defined as those with arrears equivalent to more than one years' worth of repayments, denoted LTMA) in the Irish mortgage market remains a material issue for lenders, borrowers and policymakers.[2] Mortgage arrears rates and bank non-performing loan (NPL) ratios have undergone a substantial decline since peaking in 2014, with a pivotal role played by lenders' implementation of successful restructuring arrangements. Despite the concerted efforts of many stakeholders, and a reduction from a maximum of 60,995 cases at June 2014 to 29,429 at March 2021, LTMA levels remain substantial, totalling 4 per cent of all Primary Dwelling Home (PDH) mortgages in the system (Figure 1). Currently, the vast majority of LTMA loans are not restructured, and where they are, arrears capitalization arrangements are most common.[3]

In this *Note*, we present evidence from granular micro-data on the degree of financial distress among a cohort of LTMA households that have engaged with retail banks in recent years. Our aim is that, by providing information on the debt repayment capacity and demographic characteristics of the group, further clarity can be brought to the debate around the type of restructuring or

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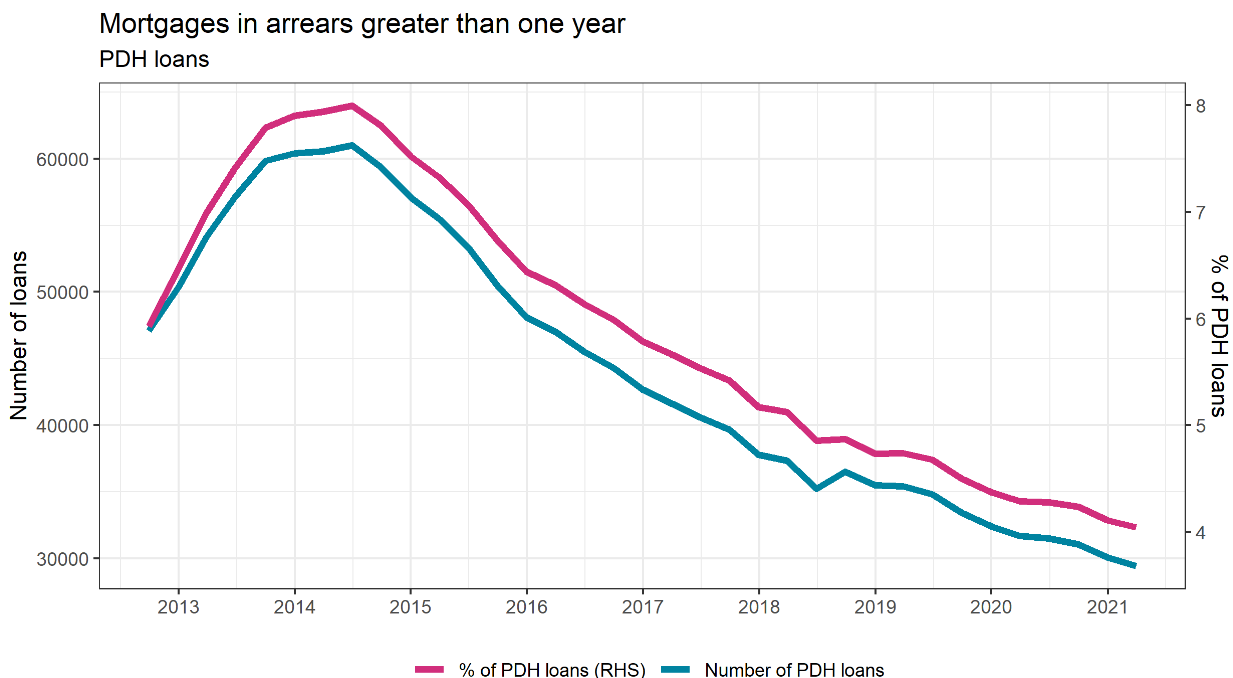
[2] Throughout this *Note*, the term "lenders" is used to denote retail banks, retail credit firms and credit servicing firms that hold or own mortgage loans.

[3] See Duignan et al. (2020) for more details on loans in long-term mortgage arrears.

resolution options that may be appropriate or possible if long-term solutions are to be found which keep borrowers in their homes.[4]

Figure 1: Primary Dwelling Home (PDH) Mortgages in Arrears greater than One Year



Source: Central Bank of Ireland mortgage arrears and repossession statistics. Donnery et al. 2018 discuss the policy measures introduced to help reduce non-performing loan ratios at Irish banks.

In this Note, we consider a number of questions including (i) the overall debt burden of this group; (ii) the repayments currently being made and the capacity of this group to pay; (iii) demographic characteristics of borrowers; (iv) non-primary-mortgage debt commitments and finally; (v) housing equity positions. Our results are based on data reported by borrowers in their engagements with retail banks through Standard Financial Statement (SFS) filings. An SFS is the mechanism through which regulated entities gather specific financial information from borrowers who are currently in or are facing mortgage arrears. The gathering of this information is a key step in the mortgage arrears resolution process (MARP) as prescribed in the Central Bank of Ireland's Code of Conduct on Mortgage Arrears (CCMA).[5]

Due to data constraints, LTMA borrowers with accounts at retail credit firms or credit servicing firms (often termed "non-banks") are not included in our analysis, nor are borrowers who have not engaged with their bank through the completion of an SFS. For these reasons, our results should not be taken as representative of the entire cohort of 29,429 LTMA loans outstanding currently. Rather, they are a representation of the financial position of *engaged borrowers at retail banks*, including some whose loans were included in portfolio sales in 2018 and 2019, covering a total of slightly over a quarter of the LTMA population currently.[6]

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[4] It is also to be acknowledged that the aim of policy in this area should not be to keep borrowers in their homes at all costs. Rather, repossession exists as an avenue to explore for lenders as a last resort, after other attempts to maintain homeownership have failed.

[5] Code of Conduct on Mortgage Arrears, 2013. https://www.centralbank.ie/docs/default-source/Regulation/consumer-protection/other-codes-of-conduct/24-gns-4-2-7-2013-ccma.pdf

[6] Among non-engaged borrowers, the topics of most importance to policy debates around arrears resolution are different to those touched on in this debate: in the case of non-engagement the policy focus must be on issues such as lenders' contact strategies, the role of advocacy groups in encouraging distressed borrowers to engage, and the functioning of repossession cases through the legal system.

Our analysis suggests that financial positions vary widely among this group, in terms of repayment capacity, incomes, employment status and other characteristics such as age and family composition. These financial and demographic profiles have important implications for the range of arrears solutions available: there is no "one size fits all" solution. In some cases, the borrower data suggest that income levels may be sufficient to pay down the accumulated loan balance and arrears, perhaps involving arrears capitalization and extension of mortgage terms, by retirement age. However, for a larger group of borrowers, current loan balances cannot be cleared based on current income available, and in many cases significant shortfalls exist.

We identify a group of borrowers (close to one-fifth of those borrowers who have actively engaged with their bank), for whom repayment capacity is so weak that no mortgage payment whatsoever appears serviceable based on current reported incomes and a reasonable level of non-housing expenditure. For this group, possible resolution options could either involve dramatic reductions in monthly repayment obligations or, for some cases, schemes such as the Mortgage-to-Rent scheme[7], which allow borrowers to remain in their house while paying an affordable rent based on their income may be appropriate. In the absence of such resolution options, the risk of loss of ownership through repossession would remain.

For another large group of borrowers, it may be possible that restructuring arrangements can be put in place that allow for affordable monthly repayments. However given the size of repayment challenges, this may involve the parking until maturity, or the write-down, of large amounts of principal balances.[8] In other cases, new entrants with different business models (for example with longer investment horizons) may be the appropriate loan holder, given that monthly repayments will be small and principal will only be covered long into the future.

Finally, for a cohort of borrowers, it appears that with minor amendments, there is sufficient income to make repayments. Understanding the impediments, if any, behind the successful restructuring of this group will be important in identifying the most effective solutions.

Our analysis relates solely to those borrowers who have engaged with their lender through the submission of an SFS. The wider context is one in which just under half of LTMA cases are reported as "non-cooperating" (Duignan et al., 2020). For borrowers who have not engaged with the processes laid out under the Code of Conduct for Mortgage Arrears (CCMA), the risk of loss of ownership through repossession is likely to remain elevated. It is likely that lenders, borrowers and stakeholders such as consumer advocacy groups can play a role in increasing rates of engagement, which will increase the likelihood that solutions that retain homeownership can be found. In cases of continued long-term non-cooperation, the functioning of the legal system to ensure the realization of collateral for lenders will continue to be critical to the smooth functioning of the mortgage market for all Irish citizens, not just those in LTMA (O' Malley (2021) discusses some of the adverse consequences for the mortgage market when there are impediments to home repossession).

2 Data

According to Central Bank of Ireland mortgage arrears and repossession statistics, there were 29,429 PDH accounts in arrears of more than one year at end-March 2021, accounting for just over €6bn of mortgage balances. These LTMA loans comprise 56 per cent of all PDH mortgages in arrears. While it is not possible to measure the number of households behind these mortgage account numbers, separate analysis suggests an average ratio of 1.2 accounts to one borrowing

[7] According to the latest statistics, a total of 5,749 cases have been submitted under the Mortgage to Rent Scheme, 1,179 have been completed, 1,079 being processed and the remaining 3,491 being ineligible or terminated.

[8] Many such arrangements, if implemented within the retail banking system, are likely to involve long-run classification as a Non-Performing Loan, which may bring additional costs due to risk weighting and capital charges.

household, implying close to 25,000 households in this group. The majority (55 per cent) of LTMA mortgage accounts are held by retail credit and credit servicing firms outside the retail banking system. Just over half of all LTMA mortgage accounts are classified as having borrowers that are "non-cooperating".[9] Previous work from Duignan et al. (2020) shows that restructures are relatively rare in this group, totalling around 10 per cent.

In this *Note*, we use granular borrower and loan-level data on a subset of the LTMA population. We merge loan level data from the five main retail banks at year end 2019 with standard financial statement (SFS) returns submitted by borrowers as part of the Mortgage Arrears Resolution Process (MARP) over the period 2012-2019.[10] The SFS data provide a rich and internationally rare source of information on the *current* financial position of borrowers with distressed debt, including additional information not available in other returns, such as household expenditure, updated income positions relative to origination, family composition, total non-primary-mortgage debt amounts and repayments.

Our analysis, focussing on the retail banks, cannot be interpreted as representative of the entire LTMA population. Our sample size and composition is nonetheless comprehensive and covers a large subset of the population. Our analysis begins with 22,548 loans that are measured as being in LTMA in either December 2017, 2018 or 2019, at the five retail banks. Including loans that were on balance sheet at end-2017 or end-2018 allows us to capture some cases that are now held by retail credit and credit servicing firms, as these particular loans exited the retail bank balance sheet before December 2019 through portfolio sales and securitization.[11] Among this pooled group of 22,548 loans visible in the three waves of Loan Level Data (LLD), there are 15,120 cases where we can identify at least one SFS submission at some point from 2012 to 2019, providing evidence of borrower-lender engagement.

For the purpose of this analysis, we limit our sample to loans where the most recent SFS has been submitted since January 1st, 2016, in order to ensure information captured in the SFS submission is relatively up to date. This leaves us with a final sample of 8,280 mortgage accounts where we focus our analysis on their most recent SFS submission. In the Appendix, Figure A.1 reports the year of origination of loans in each of the 2017, 2018 and 2019 groups.

Table 1 compares summary statistics of LTMA and non-LTMA loans who have engaged in the MARP since 2016. Compared to loans completing an SFS at lower arrears levels (<360 days past due (DPD)), LTMA loans are characterised by higher outstanding balances, monthly instalments due and LTV ratios. These findings update and expand upon a number of statistics reported in O'Malley (2018).

LTMA households have lower net monthly incomes and monthly expenditure, while their loan-to-net-income ratios, non-primary-mortgage obligations and debt servicing ratios (DSTI) are higher. Two summary measures of repayment capacity are provided. The Residual Income to Mortgage Repayment (RIMR) ratio (a measure of available income to service a mortgage against the contracted amount due) is significantly lower for LTMA borrowers, while LTMA monthly deficits (what is owed after paying all expenses including your mortgage debt) after all debts and expenses are larger.

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[9] See Residential Mortgage Arrears and Repossessions Statistics Explanatory Notes. Chapter 2 of the CCMA outlines the circumstance where a borrower can be considered as not co-operating with the lender.

[10] For an explanation of the SFS and LLD data sources, please see (McCann & O'Malley, 2020), (Kelly & McCann, 2015), Danne and McGuinness (2016).

[11] Of the total, roughly 10 per cent relate to end-2017 and a further 37 per cent to end 2018.

Table 1: Comparison of Non-LTMA (<360 DPD) and LTMA (>=360 DPD) loans with attached SFS since 2016	Non-LTMA (N=24,871)	LTMA (N = 8,280)
Loan Level Data		
Age	47	48
Outstanding balance	€147,148	€153,359
Current contractual instalment	€856	€922
*Property value**	€272,895	€218,365
*Current loan to value**	54%	76%
% Contractual instalment being paid	100%	41%
Standard Financial Statement		
Net monthly income	€2,960	€2,583
Current monthly expenditure	€1,987	€1,831
RLE	€1,815	€1,792
Total surplus/deficit	-€101.70	-€385.56
Loan to net income	4.07	4.87
DSTI	36%	42%
RIMR	1.06	0.64
% with other debt	61%	52%
% with secondary mortgage	9%	7%
*Other monthly debt obligations***	€230	€279

*Source: Standard Financial Statement and Loan Level data. Notes: Values refer to median amounts. "% with other debt" and "% with secondary mortgage" refers to proportion of sample with other debt and a secondary mortgage respectively. *As at 2019 with 2017/2018 LLD loans imputed to 2019 property values using a national index.*
*** Of those with other outstanding debt. Total Surplus/Deficit = net income - non-housing expenditure - contracted debt obligations.*
RIMR, the Residual Income to Monthly Repayment = Net monthly income – min(Reasonable Living Expense (RLE), Current Expenditure) – other debts due as a proportion of mortgage payment required to amortise the balance over the current term. An RIMR > 1 indicates that a household can meet their monthly mortgage repayments in full.
Guidance on RLE is taken from the Insolvency Service of Ireland (ISI)

3 LTMA borrower indebtedness and monthly surplus/deficits

We use LLD and SFS data to provide analytical evidence for policy considerations on the range of potentially appropriate and available debt resolution solutions for the engaged LTMA cohort in Ireland.

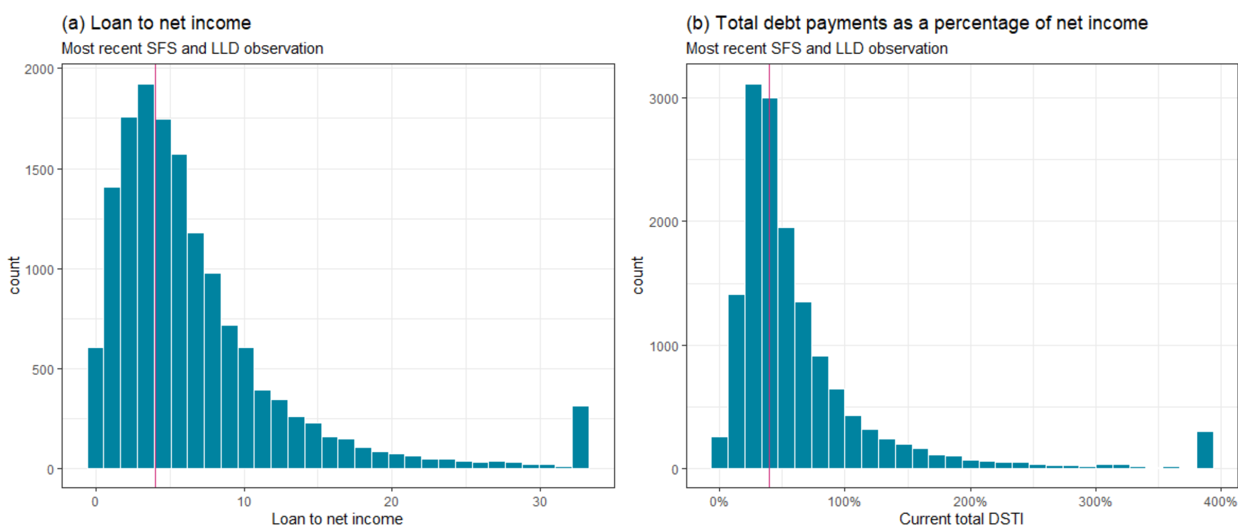
3.1 Borrower indebtedness

A large literature confirms the importance for borrower distress and financial stability of elevated loan to income multiples and debt servicing burdens (see for example McCarthy (2014), Kelly, O'Malley and O'Toole (2015), Kelly and Mazza (2019), Gerardi et al. (2018) for a range of findings on both origination and current debt burdens). The SFS data allow us to measure the size of the debt burden facing borrowers in LTMA. Relative to net income, the median PDH mortgage to income (LTI) multiple is 4.8, with a mean LTI multiple of 6.5 (Figure 2). As an average, this is extremely elevated in a cross-country setting.[12]

[12] The LTI multiple is not comparable to the 3.5 multiple under the Irish macroprudential mortgage measures as the data here are based on net incomes, whereas the 3.5 limit is relative to gross income.

Panel (b) looks at the debt-service-to-income ratio (DSTI). Half of LTMA borrowers owe more than 43 per cent of their monthly take-home income on debt repayments (including non-mortgage debt), with the mean DSTI being 61 per cent. While there is no universally agreed threshold for identifying a debt burden as being "high-risk", practitioners often cite a ratio of one-third of net monthly income as being a relevant indicator.[13] In an Irish context, McCann and O'Malley (2020) have previously shown that average mortgage payment to income (PTI) ratios (excluding non-mortgage debt) in 2018 were lower across the entire mortgage market relative to the group of mortgages with a restructure in place, for whom PTIs above one third were relatively common.[14] In a number of European countries, macroprudential regulation sets out maximum DSTI at loan origination. Examples of the levels at which these are set include 35% in France, 30-40% in Austria, 40% in Latvia, Lithuania and Malta.[15] The debt service burden facing the LTMA cohort is extremely high when compared with these wider indicators.

Figure 2: LTI and DSTI distributions



Source: 8,280 LTMA loans with a completed SFS at a retail bank between 2016 and end-2019. Right tails aggregated to account for outliers.

Housing equity is relevant in the context of LTMA, for two reasons. Firstly, a large research literature has shown its importance in explaining mortgage default rates, often as a necessary complement to liquidity challenges in a "double trigger" setting (see Foote and Willen, 2017, for a review of this literature). Secondly, the housing equity position will have a bearing on the range of possible arrears resolution strategies available. For example, where there is substantial positive equity, a voluntary sale of the property may be available as a solution, conditional on a follow-on housing solution appropriate to the borrower's financial situation being available after the sale. Positive equity also currently makes solutions like Mortgage to Rent or write-downs during Personal Insolvency Arrangements less likely.

We estimate that 28 per cent of the engaged LTMA cohort are in negative equity, based on the December 2019 property price estimate (Figure 3). There are another 17 per cent who are in relatively low levels of positive equity (80 per cent LTV to 100 per cent LTV), for whom the capacity to trade down or access new housing options would be limited in the event of a voluntary

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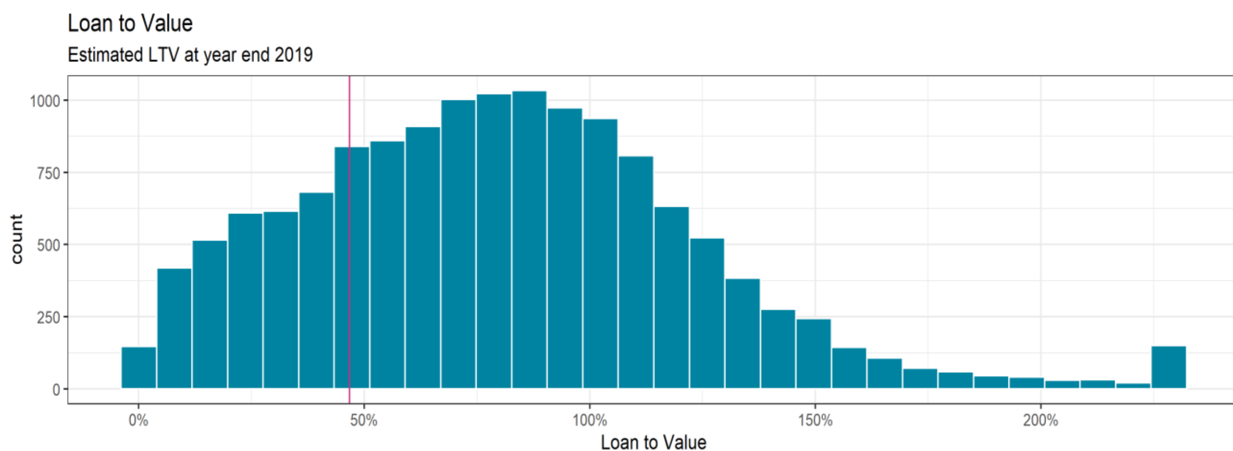
[13] Kelly & Mazza (2019) discuss the differing views on defining mortgage affordability and over-indebtedness including via DSTI thresholds.
[14] See Figure 4 in McCann and O'Malley (2020).
[15] There are a number of country-specific implementation features that complicate comparisons, such as interest rate stress tests, yearly re-calibration, and differential treatment depending on currency, interest rate type or income level. There are also a number of European countries where the maximum DSTI is set higher, such as Slovenia, Poland and Portugal where the level can reach 50% in some cases.

sale. Across the entire sample, the euro value of housing equity in the hypothetical event of a sale would on average amount to 34 months of rental payment at local market rental levels. Current house prices developments in early 2021 suggest that housing equity positions have improved since the point of these estimates.

Given that borrowers exiting LTMA may have difficulty accessing new mortgage finance, these figures depict the clear challenges with housing access that would remain in cases where LTMA loans were cleared through a voluntary sale. For this reason, policy responses targeting smooth transition to supported housing arrangements would be necessary in many cases if positive equity was to be used to clear LTMA loans, highlighting the interlinkage between housing and financial policy to this complex challenge.

Figure 3: LTV distribution of engaged LTMA borrowers



Source: 8,280 LTMA loans with a completed SFS at a retail bank between 2016 and end-2019. All housing values indexed to end-2019 for purposes of LTV calculation

The composition of debt between mortgage and non-mortgage liabilities may be relevant for policy solutions. Where there are multiple creditors, a Personal Insolvency Arrangement (PIA) may be a more appropriate avenue given that this solution offers a coordination mechanism that may be difficult for borrowers to arrive at otherwise.[16] Table 1 shows for our sample of engaged LTMA borrowers, 52 per cent have non-primary-mortgage outgoings. At the median, the value of these non-primary-mortgage repayments is €279, and 90 per cent of borrowers have monthly outgoings below €1,400. Seven per cent have a secondary mortgage (based on their most recent SFS).[17]

3.2 Expenditure, income and monthly financial surpluses

In this section, we examine the employment status, net monthly income and spending of LTMA households that have engaged through the submission of an SFS. A sizeable cohort of these borrowers were unemployed at the time of SFS submission – between a third for couples (when measuring the employment status of the borrower filling in the SFS) and 36% for single borrowers. The median net monthly income is €2,583. Just over a fifth of cases have income below €1,614. This compares to a median monthly income of €3,947 for all owner occupier households (SILC, 2019).[18]

[16] See Insolvency Service of Ireland.

[17] For the vast majority of borrowers, primary mortgage debt is the largest of their debt expenditures. Those who's other debt is greater than primary debt are primarily cases where the borrower has a secondary mortgage.

[18] New mortgage borrowers for example are generally from the top two quintiles of the income distribution.

When arriving at debt resolution mechanisms, the household's expenditure on non-housing items is a potential adjustment channel.[19] Where a household can reduce spending to a level that is still commensurate with a reasonable standard of living, such adjustments will reduce the need for debt write-downs or changes to repayment structures. However, where borrowers are already at or below a reasonable minimum living standard, such adjustments are not available or appropriate.

The median monthly expenditure in our sample is €1,831. We use the ISI's Reasonable Living Expenditure (RLE) guidelines to define a reasonable non-housing expenditure for each household in the data, with a median of €1,792.[20] Comparing monthly expenditure and RLE levels for each SFS, we find that just over one half of LTMA borrowers have expenditure below minimum reasonable levels at the point of engagement with the lender, implying there is no adjustment capacity available whatsoever.

Figure 4: Consumption expenditure and reasonable living estimates

Source: 8,280 LTMA loans with a completed SFS at a retail bank between 2016 and end-2019. Horizontal axis is reported expenditure on non-housing items in the SFS.

Taking into account the borrower's net income, their non-housing expenditure, and their contracted debt obligations, we can construct a measure of monthly financial surpluses which acts as an extremely useful indicator of repayment capacity and financial health. Figure 5 shows that 31 per cent of LTMA borrowers have a monthly surplus, implying that their current contracted payments are potentially serviceable, meaning 69 per cent of LTMA cases are in deficit. At the left tail of the graph, over a quarter have monthly deficits on this basis of more than €1,000.

We test the sensitivity of these surplus estimates to the removal of non-mortgage debt burdens. On this basis, the share of LTMA borrowers with a monthly surplus is 43 per cent. Further, we test the sensitivity of this surplus measure to adjusting all expenditures above the RLE down to the RLE level, which leads to an estimate that 55 per cent of borrowers have a surplus.

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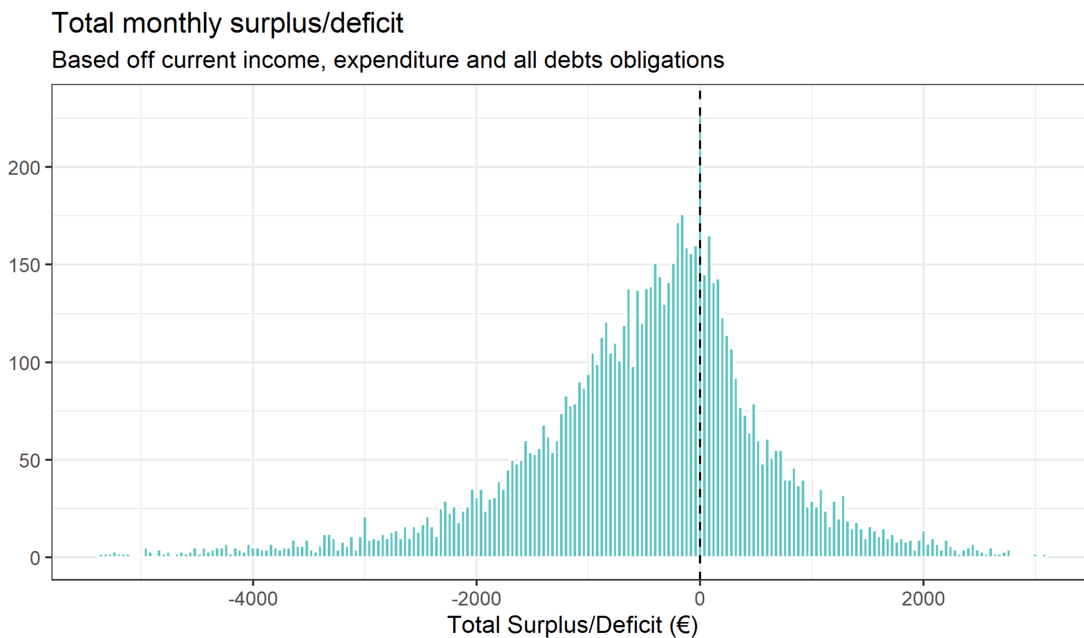
[19] Income and expenditure data are not required to be verified from a regulatory perspective.

[20] The Vincentian Partnership minimum essential budget standards for urban and rural households tend to be slightly higher. For example, in 2020 the minimum equivalent monthly spend is c.€2,200 for a 2 parent 2 infant child urban household or c.€2,400 for a 1 parent 2 secondary child rural household.

Figure 5: Distribution of total monthly surplus/deficits



Source: 8,280 LTMA loans with a completed SFS at a retail bank between 2016 and end-2019 Note: Surplus is defined as (net monthly income – expenditure – mortgage due – other debts due)

We then translate this surplus concept into a measure of mortgage repayment capacity that we term the RIMR (*residual income to mortgage repayment*, Labonne, McCann and O'Malley (2021)).

The RIMR is measured as:

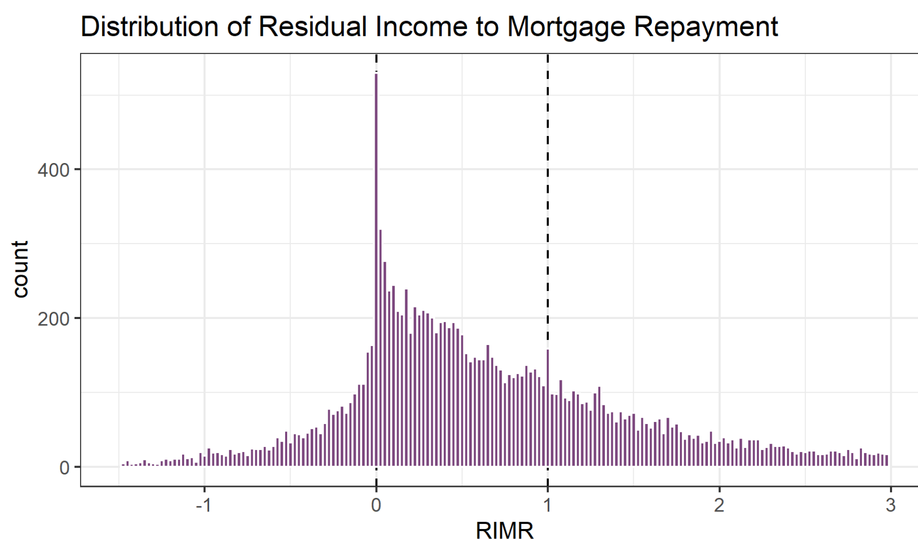
$$\frac{Net\ monthly\ income - \min(RLE, Current\ Expenditure) - Other\ debts\ due}{Mortgage\ payment} \quad (1)$$

Where $Mortgage\ Payment$ is the amount required to amortise the balance under the loan's current term, rather than the current contracted mortgage amount, which in some cases may be temporarily reduced to an interest-only or other reduced payment.

Where RIMR equals 1, the borrower has enough income available after clearing basic expenditures and non-primary-mortgage outgoings (including unsecured and personal loans) to make their full mortgage repayment. Between a RIMR of 0 and 1, income is available to service some portion of, but not all of the mortgage payment. A negative value of RIMR implies that the borrower has no residual income whatsoever available to service a mortgage repayment.

In our sample, close to one-fifth of borrowers have an RIMR below 0, indicating that they have no repayment capacity when accounting for reasonable living expenses and other debts. 37 per cent of borrowers have an RIMR ratio greater than or equal to 1, suggesting capacity to make full repayment based off their current financial situation.

Figure 6: Distribution of "Residual Income to Mortgage Repayment" (RIMR)



Source: 8,280 LTMA loans with a completed SFS at a retail bank between 2016 and end-2019. Note: RIMR calculated as the ratio of residual income (net income after expenditure and non-mortgage debts) to contracted mortgage payment due. A RIMR of 1 implies that borrowers have exactly enough residual income available to clear their mortgage by maturity. A RIMR below zero implies borrowers have no income available to service mortgage debt.

3.3 Debt servicing capacity of the LTMA cohort

We take all information available and summarise the financial position of borrowers into three distinct cohorts. In each, borrowers are identified based on the share of total outstanding balances owed that can be cleared by mortgage maturity, based on our estimate of their monthly debt service capacity:

1. *More than 50 per cent of the total balance can be cleared.*

These are borrowers who (i) have sufficient income to make full repayments up to a term equivalent to age 65, or (ii) cannot repay the balance in full, but have capacity to make monthly repayments such that over 50% of the outstanding balance can be cleared.

2. *Less than 50 per cent but more than 0 can be cleared.*

These borrowers have little to no capacity to service their primary mortgage debt each month. Borrowers in this cohort have small positive residual incomes once expenses and other debts are accounted for, which would equate to less than 50 per cent of the total mortgage amount being cleared.

3. *No mortgage balance can be cleared.*

These are borrowers who have a net deficit of residual incomes once expenses and other debts are accounted for (*RIMR<0*), and therefore have no capacity to make any repayments against their primary mortgage, given their current financial position.

The following table describes the proportion of our sample of households in LTMA who have engaged since 2016 that fall into each of the respective categories above. For those in the first category, solutions already available within most lenders' suites (arrears capitalizations, term extensions, split mortgages, interest rate reductions, part capital and interest) are likely to suffice, given that there is significant repayment capacity based on current income. However for the 25.3 per cent who can clear less than half of mortgage balances, and the 17.9 per cent that have no income whatsoever to service mortgage debt, a wider set of solutions, involving debt write downs,

long term extensions of maturity, split mortgage arrangements, new finance providers, PIAs through the insolvency system, or solutions such as the Mortgage to Rent scheme, would be required to avoid the ultimate route of resolution of these cases via repossession and loss of homeownership.

The estimates in Table 2 must be interpreted in light of the data being studied. These are estimates for engaged borrowers, who have completed SFS forms at a retail bank during the period up to end-2019. They are based on borrower-reported information in the SFS files, and the authors' calculations. By contrast, Duignan, et al. (2021) report system-wide numbers, including LTMA exposures at banks and non-banks, based on lenders' own assessments of the capacity to clear all debts across their entire portfolio. On that basis, lenders report that the share of borrowers across the system with weak repayment capacity is greater than that reported among engaged borrowers in this paper.

Table 2: Cohorting of LTMA group based on debt service capacity

Debt repayment capacity over lifetime to retirement	Proportion of households
More than 50 per cent of the total balance can be cleared	56.8%
Less than 50 per cent but more than 0 can be cleared	25.3%
No mortgage balance can be cleared.	17.9%

Note: these estimates are based on the subsample of LTMA mortgages that were held by retail banks at one of end-2017, 2018 or 2019, and have engaged with their lender in submitting an SFS form.

3.4 Amounts being paid

Figure 7 shows the amounts being paid relative to contractual instalments, from loan level data for all retail bank LTMA borrowers. The statistic shown is the average monthly repayment amount over the last six months to the total contracted payment and we show this for three groups: LTMA (having completed an SFS since 2016), LTMA (without an SFS since 2016) and the total mortgage population. The latter group is included to provide context, as a benchmark to the LTMA groups. The closer this statistic is to 1, the more of the contractual payment is being paid while a statistic of 0, signifies nothing is being paid.

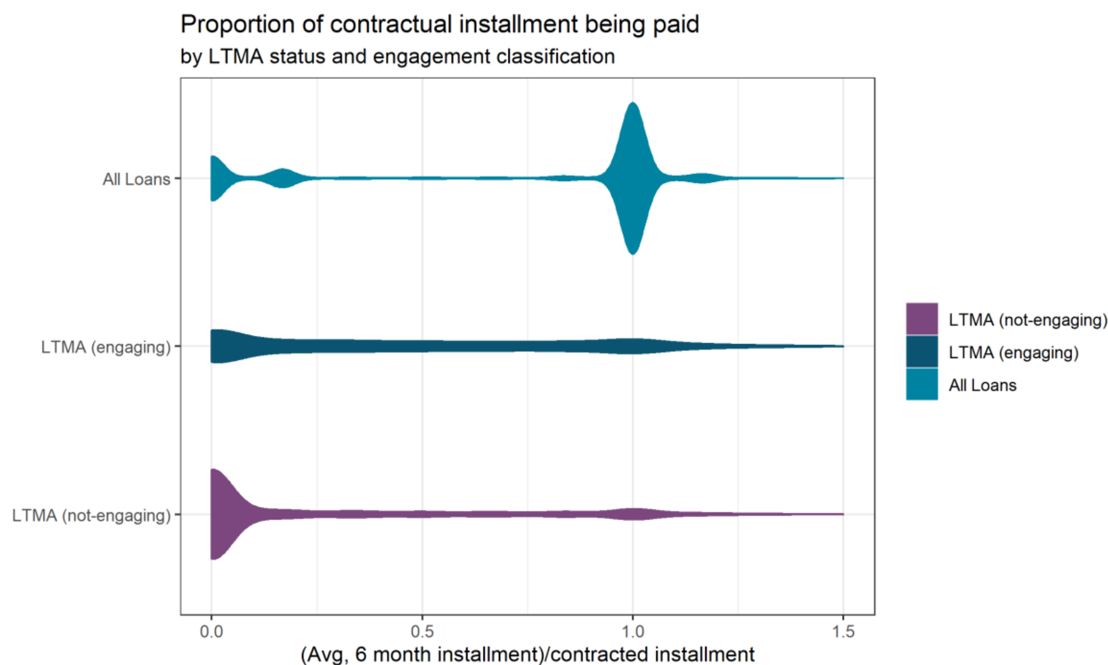
From Figure 7, we can see that while (a) the vast majority of mortgaged borrowers have paid their contractual payment over the last six months, this (b) decreases for the LTMA (engaging) group and (c) decreases to almost zero for the LTMA (non-engaging) group. In total, across both the LTMA groups, 40 per cent of LTMA borrowers have not made any payment in the previous 6 months. This share is 20 per cent for the LTMA (engaging) group and 53 per cent for the LTMA (non-engaging group).[21] The smooth shape of the LTMA (engaging) distribution indicates that there is a wide range of repayment activity among the cohort, with similar proportions making very high and very small proportions of total payments owed.

For LTMA borrowers who have engaged since 2016, 79 per cent have made some payment in the past 6 months, while approximately 16 per cent have been meeting their full contractual instalment amount. Of the engaging borrowers, 55 per cent are paying at least the monthly

[21] In a separate analysis (although, not directly comparable) conducted by the Central Bank of Ireland, Duignan et al. (2020) estimate that 33 per cent of borrowers greater than 720 days past due and 15 per cent of borrowers between 361 and 720 days past due made no repayment between June and December 2019. Furthermore, O'Malley (2018) finds that, as at December 2017 LTMA borrowers tend to have a larger repayment burden than those who have exited arrears, and are located in parts of the country with the largest falls in income since the mid-2000s

contractual interest amount on their PDH mortgage. In many cases, this involves a currently-contracted reduced payment such as Interest-Only, rather than the full amortizing amount.

Figure 7: Distribution of borrowers' repayment history



Note: these estimates are based on the subsample of LTMA mortgages that were held by retail banks at one of end-2017, 2018 or 2019. Loans defined "LTMA (engaging)" have engaged with their lender in submitting an SFS form, whereas "LTMA (not engaging)" relates to LTMA loans for whom no SFS has been completed.

There is a strong relationship between repayment capacity (as calculated in Section 3.3) and repayment behaviour. Figure 8 reports the share of loans in our LTMA cohort who have engaged since 2016 making various repayment amounts over the 6 months preceding data collection as a function of the estimated repayment capacity based on SFS information. Among those estimated to be able to clear more than 50 per cent of their mortgage balances by age 65, 58 per cent are paying more than half their current contracted amounts, while 15 per cent are making no payments. By contrast, among those estimated to have no repayment capacity based on SFS information, only 27 per cent are making full repayments based on current contracted amounts, while 34 per cent are paying nothing and another 39 per cent are paying some amount, but less than half that owed.

Table 3 shows that there are important differences between borrowers paying large versus small amounts relative to their contracted amount owed. It is noteworthy that age, mortgage balances, expenditure, and the existence of non-mortgage debts do not appear to be correlated with mortgage repayment behaviour. By contrast, there is clear evidence that traditional "liquidity" factors matter a lot: incomes are substantially higher among the group making larger payments, while estimated deficits and debt service to income and loan to income ratios are all noticeably lower. Similarly housing equity appears relevant, with LTVs being nearly 20 points higher among the group making no payments compared to the group paying more than 50 per cent of the contracted amount owed. These findings confirm earlier work, e.g. McCann and O'Malley (2020), in that observable forces related to borrowers' incomes and debt service capacity seem to be strong predictors of observed repayment behaviour. In short, those that have experienced more severe shocks appear to be those more likely to make smaller mortgage repayments.

Figure 8: repayment behaviour for cohorts based on repayment capacity

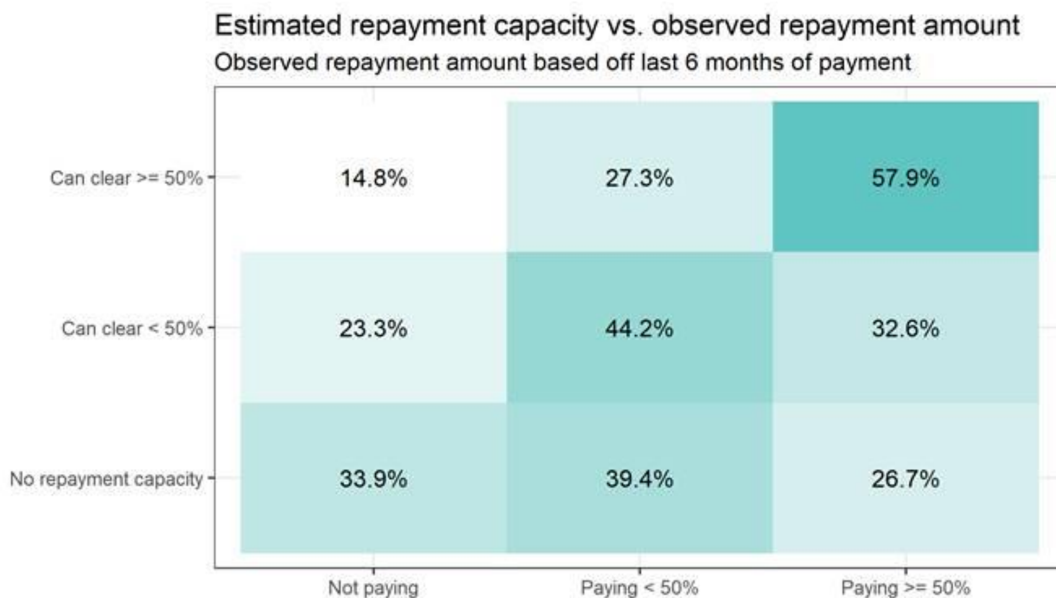


Table 3: borrower profiles across cohorts based on recent payment activity

	Not paying	Paying < 50%	Paying >= 50%
Age	48	49	48
Outstanding Mortgage Balance	€152,817	€161,768	€151,614
Monthly Payment Due	€961	€1,051	€830
Property Value*	€199,713	€220,570	€232,411
LTV*	87%	77%	69%
Proportion being paid	0%	22%	92%
Income	€2,190	€2,412	€2,937
Expenditure	€1,743	€1,814	€1,919
RLE	€1,709	€1,653	€1,815
Surplus/Deficit**	-834	-700	-59
Loan to Net Income	5.8	5.5	4.2
DSTI	54%	53%	34%
RIMR***	31%	41%	97%
Percentage with other debts	49%	54%	56%
Percentage with BTL debts	11%	7%	6%
Share of sample	20.3%	33.7%	46.0%

Source: Standard Financial Statement and Loan Level data. Notes: Values refer to median amounts. "% with other debt" and "% with BTL" refers to proportion of sample with other debt and a BTL mortgage respectively.

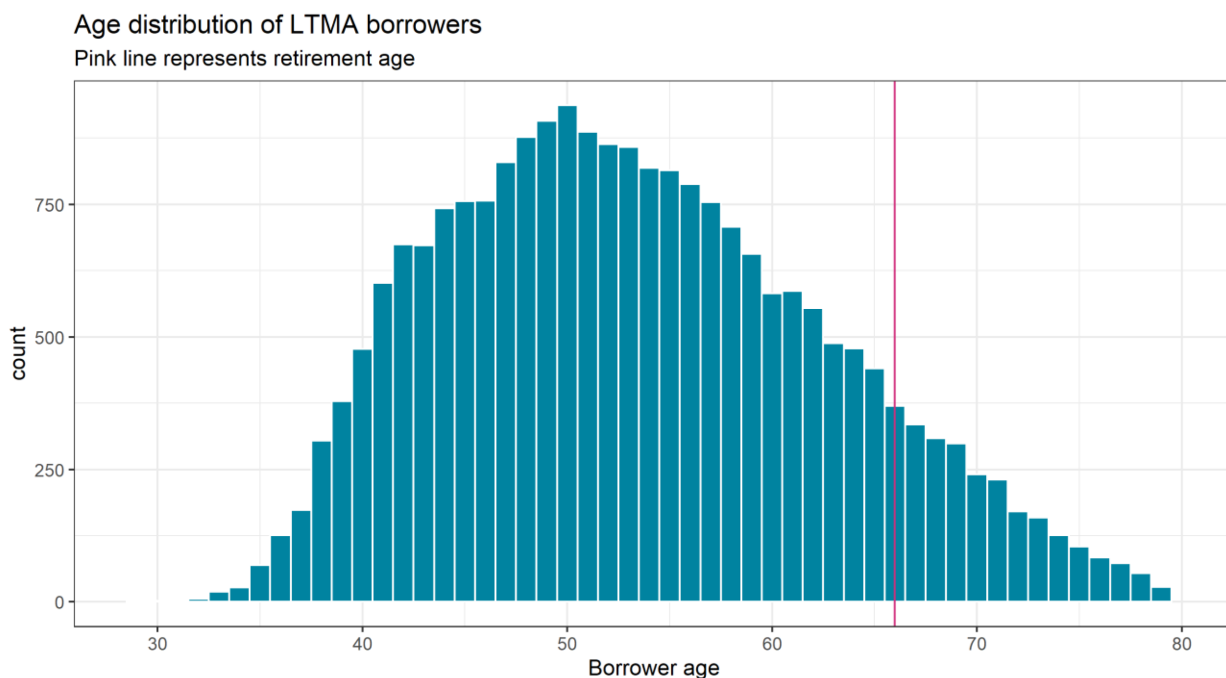
**As at December 2019, with 2017/2018 loan level data having property values rolled forward to December 2019 using an aggregate index ** Of those with other outstanding debt. Total Surplus/Deficit = net income - non-housing expenditure - contracted debt obligations. ***RIMR, the Residual Income to Monthly Repayment = Net monthly income – min(Reasonable Living Expense (RLE), Current Expenditure) – other debts due as a proportion of mortgage payment required to amortise the balance over the current term. Guidance on RLE is taken from the Insolvency Service of Ireland (ISI)*

3.5 LTMA borrower demographics

The age profile of LTMA borrowers has important implications for the availability of resolution options. Where borrowers are younger, the extension of mortgage terms to a maturity date of 65 years of age (or older) will yield greater reductions in repayments (Labonne, McCann, O'Malley, 2021), although extending terms can lead to an increase in the overall cost of credit. On the other hand, for older borrowers, where income generating capacity is weaker and imminent retirement may substantially reduce repayment capacity, solutions involve the parking or drastic reduction of repayments may be more appropriate.

Three quarters of borrowers in LTMA are under 60, with the bulk between 40 and 60.[22] 12 per cent are aged over 65. Looking at family composition, almost three fifths (58 per cent) are couples with children, but around a third do not have dependent children.

Figure 9: Age of eldest borrower in household



4 Modelling modified mortgages

In this section of *the Note* we use the data outlined above to construct estimates of borrower's ability to repay. In section 4.1 we calculate the present value of monthly household income in excess of reasonable living expenses and other debt service obligations. In section 4.2, we apply a number of hypothetical restructure options to each mortgage to examine what treatment would be required to allow households to afford monthly repayments.

4.1 Present value

The value of a mortgage derives from the promise of future cash flows from the borrower, or in cases where borrowers cannot make repayments, the value of the underlying property upon collateral realisation. In the case of the former, we estimate the value of future cash flows as follows. We assume that all residual income after reasonable living expenses and other debt service obligations have been met is used to service the outstanding mortgage. For each household, these monthly contributions are discounted at the current interest rate attached to their primary mortgage. The value of the mortgage based off this estimation is calculated as the

[22] Borrower age is measured based solely on the age of the borrower completing the SFS form.

sum of these discounted cash flows from now until the borrowers retirement age (or current mortgage maturity date, whichever is later) up to the value of the current outstanding balance.

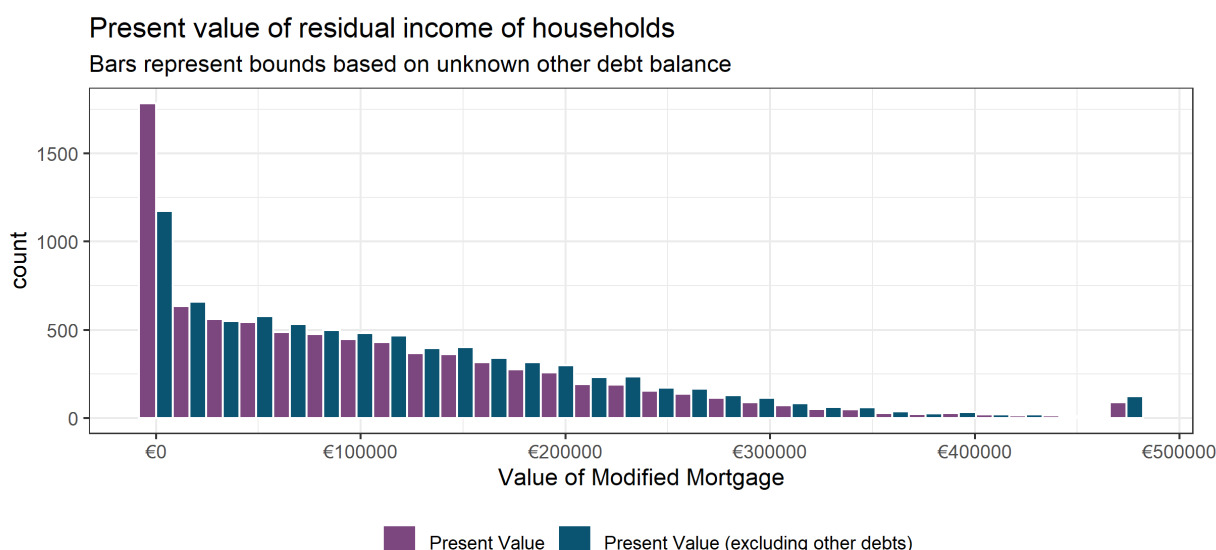
$$Present\ Value = \sum_{1}^{N} \frac{\max(C,0)}{(\frac{1+r}{12})^N} \qquad (2)$$

Where $C = Net\ monthly\ income - \min(RLE, current\ expenditure) - Other\ debt\ repayments$

and $N = \max(Months\ until\ retirement\ age, Months\ until\ mortgage\ maturity)$

Figure 10 shows the distribution of the present value of the cash flows in our sample of LTMA loans who have engaged by submitting an SFS. [23]

Figure 10: Profile of values of modified mortgage, based on serviceable payments



As described in section 3.2, close to one-fifth of our sample has no residual income once reasonable living expenses and other debts are accounted for, meaning this cohort has future cash flows with an estimated present value of zero over the lifetime of their modified loan. Assuming non-primary-mortgage debt levels remain constant for the lifetime of the mortgage, 60 per cent of borrowers in this sample have an annuity value of less than €100,000.

The present value of residual future cash flows from the borrower is one way of calculating the value of the mortgage. The lender may also seek to redeem the value of the loan through repossession proceedings. These valuation techniques based on collateral values are also likely to be relevant when retail credit and credit servicing firms are considering the purchase of loan portfolios, and therefore are relevant for considering capital implications of loan sales.

We calculate the value of the property upon realisation assuming repossession and disposal of the property over a seven year horizon. The comparison of a modification-based versus a collateral-based valuation is presented in Figure 11. Panel (A) plots the value of the residual cash flows to retirement age against the repossession amount. Under this valuation, the repossession amount is

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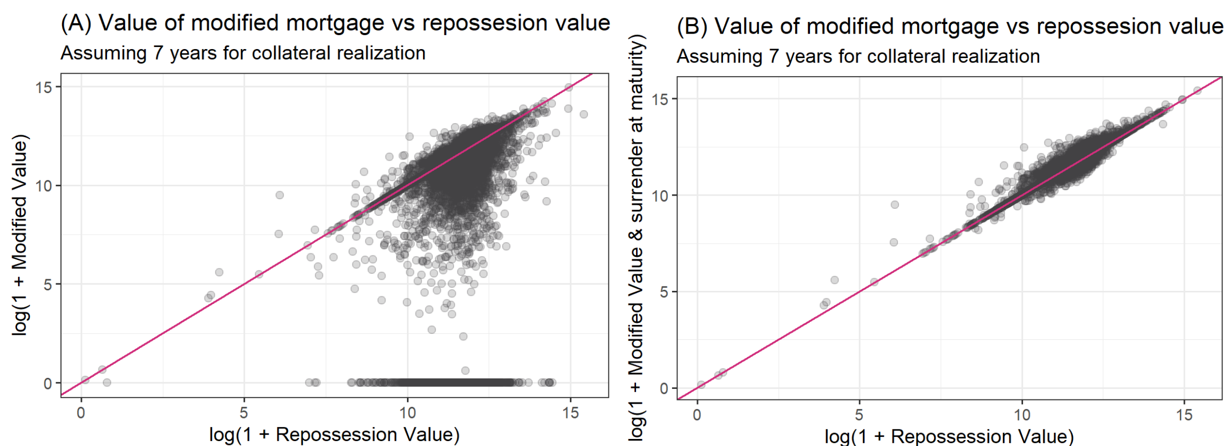
[23] "Other debts" as listed in the SFS may refer to various types of debt, including credit card debt, car loans, court mandated debt etc. As many of these obligations may vary though time, we cannot definitively say what monthly other debt obligations may be into the future. Therefore we construct bound as seen in Figure 9. showing the present value of cash flows when other debts are zero and when other debts remain at the same monthly level perpetually.

greater than the value of residual cash flows in 55% of cases. This highlights a particular policy challenge in an environment where the cohort of LTMA borrowers with significant solvency challenges co-exists with buoyant aggregate house prices.

One way in which the repayment capacity of borrowers, even where weak, can be utilised to retain homeownership is where principal payments are parked until a future date. Examples of arrangements that incorporate these features are split mortgages, or long-term interest-only or payments of partial capital and interest. In such cases, there will be a large lump-sum payment remaining at loan maturity, which may need to be cleared through the sale of the property. For such arrangements to contribute meaningfully to ongoing LTMA resolution, an acceptance of the need to utilise the housing asset as part of the ultimate arrangement is required on behalf of borrowers in arrears.

Panel (B) adapts the method in Panel (A) by incorporating the value of the modified mortgage where the remaining outstanding balance (if any) at maturity is cleared through surrender of the property, with the mortgage interest rate used for discounting. In this scenario, repossession has a higher value than the modified mortgage in only 10 per cent of our sample.

Figure 11: Value of modified mortgage and estimated collateral realisation value



5 Relevance of findings for policy consideration in the context of retaining homeownership

Our analysis has uncovered wide variation in the financial profiles of long-term mortgage arrears borrowers engaging with the mortgage arrears resolution process in Ireland. It highlights the lack of a "one-size-fits-all" approach and suggests a combination of solutions will be required as all policy actors and lenders aim to resolve the situation from 2021 onwards.

We have shown that there is a substantial engaged LTMA cohort that simply do not have current capacity to service mortgage debt, even when their non-housing expenditure is reduced to the ISI's RLE recommendations. This group is estimated to be around one-fifth of engaged LTMA borrowers. Even allowing for the write-down of non-primary-mortgage debts does not alter this estimate significantly. Depending on the housing equity situation and other eligibility criteria, the Mortgage-to-Rent scheme is likely to suit some in this group, given its focus on borrowers that have needs similar to those availing of social housing in Ireland. Other innovative solutions that involve assisted mortgage or rent payments could be explored as possible alternative options for this group. For some borrowers, already in positive equity in 2021, a voluntary sale of the property is also a potential solution, but would need to be carefully considered based on individual households' capacity to find alternative accommodation with the sale proceeds.

For older borrowers with such weak repayment capacity, products which allow the borrower to pause or substantially reduce repayments that are ultimately cleared through a property sale, can buy valuable time to allow the household to continue availing of the housing service for an agreed period, while minimising the month-to-month financial burden. Recent innovations in Personal Insolvency Arrangements highlight the growing scope for these type of arrangements to resolve such cases. We estimate that a quarter of LTMA borrowers are over 60 years of age, with 12 per cent already over the standard retirement age of 65.

For a group with moderate repayment capacity, these repayments will fall far short of clearing the overall mortgage balance by retirement age. In this group, a range of solutions could be explored. Many are already in positive equity, and for others, over a long-term horizon, there will be equity in the home based on the longer-term performance of house prices. A combination of modifications already regularly used within the lenders' suites (e.g. arrears capitalizations combined with term extensions, interest rate reductions, or split mortgages), and debt write-down in some cases, may allow many within this group to clear their mortgages by maturity and retain homeownership. We estimate that a quarter of LTMA borrowers have repayment capacity to service some debt, but will not clear more than half of their total mortgage balance by retirement age based on current profiles.

Finally, there is a group of borrowers for whom the majority or all of the mortgage balance appears serviceable. This is the group of borrowers that can achieve solutions most readily, and most likely through the existing suite of restructures used by lenders. Lenders should identify and engage with these higher-capacity borrowers to ensure that solutions are put in place to allow borrowers a certain path to full debt and arrears clearance.

Outside of our analysis, the debate must also consider the large group of non-cooperating borrowers, for whom, without engagement, the only available solution appears to be the pursuit of collateral through the courts system. Duignan et al. (2020) report lack of engagement from 43 per cent of borrowers in long-term arrears. For this group, policy goals should focus on continued attempts to initiate engagement, to improve lenders' processes for ensuring that engagement is as smooth as possible for those attempting it, all while ensuring that a "credible threat", through the courts system, is in existence.

6 Conclusion

The long-term mortgage arrears (LTMA) crisis pre-dates the COVID-19 pandemic, and represents one of the most difficult policy challenges facing the Irish financial sector. Due to a combination of factors, including the severity of the effect of the previous crisis on household balance sheets, the inappropriate use of short-term restructuring arrangements by lenders, and the weak enforcement of collateral in Ireland, there remain over twenty nine thousand owner-occupier mortgage accounts in arrears of more than one year.

In this *Note*, we have used detailed household balance sheet data to depict the financial situation of those in long-term arrears that have engaged with a retail bank. While this data should not be taken as representative of the entire cohort of LTMA loans outstanding currently, they are a representation of the financial position of *engaged borrowers at retail banks*, covering a total of slightly over a quarter of the LTMA population currently. The research suggests there is wide variation in the financial and demographic profile of borrowers who have filled out a Standard Financial Statement.

Our research confirms that there is significant financial distress in our sample, with the average ratio of debt service burdens to net income being 61 per cent (with a median of 43 per cent), far surpassing typical levels deemed appropriate or sustainable. We show that negative equity levels are far higher in this group than in the wider population, and that close to half of all engaged

borrowers are already spending less than would be recommended for a "reasonable living standard".

We assess debt service capacity, measured using information on incomes, expenditure, family situation and mortgage and non-mortgage debt burdens. In a fifth of all cases, income is so low that a mortgage of zero can be serviced. We show that in the majority of cases, collateral is more valuable than the cash flows that can be generated based on borrowers' current repayment capacity, highlighting the policy challenges that will be faced if borrowers are to remain in their homes. Importantly, we also show that, if some principal is parked and recovered at a later date, for example through a split mortgage, the relative value of avoiding repossession rises substantially for most LTMA mortgages.

We finish the *Note* with a discussion of the type of policy solutions that may be appropriate for the varying borrower types in the LTMA cohort, highlighting that a wide range of solutions must be tailored to the wide range of financial distress levels identified in the research.

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Appendix

Figure A.1: Distribution of SFS submission dates

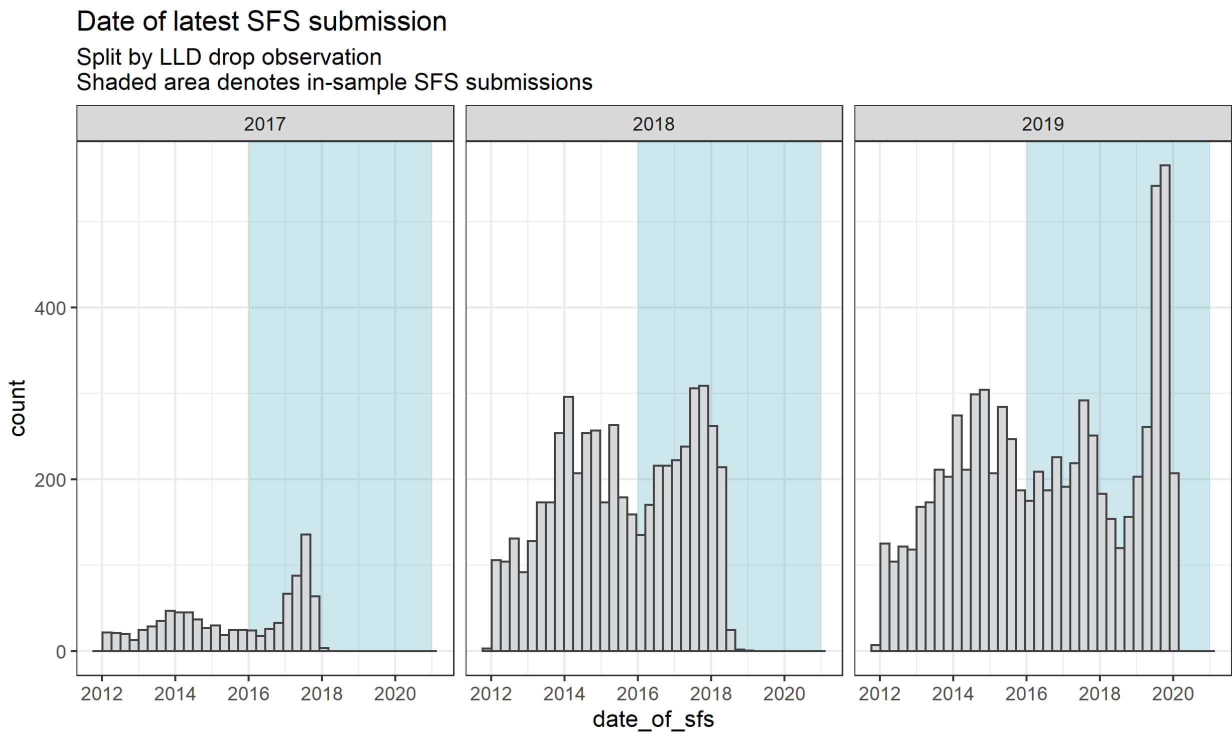

Table A.1: Breakdown of LTMA/SFS sample

	Number of LTMA loans			
LLD observation year	2017	2018	2019	Total
Total	1,606	8,434	12,508	22,548
With accompaning SFS	979	5,462	8,679	15,120
Most recent SFS (Date of SFS >= 2016)	503	2,483	5,294	8,280

Source: Standard Financial Statement and Loan Level data.

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