Banc Ceannais na hÉireann
Central Bank of Ireland
Eurosystem

Economic Letter Series

Vol 2017, No. 16

Mortgage modification in Ireland: a recent history

Fergal McCann[1]

Abstract

Mortgage modification has played a central role in the policy response to the mortgage arrears crisis in Ireland. In this *Letter* I use Central Bank loan level data to provide a time line of the recent history of modification issuance in Ireland, highlighting the rapid switch from modifications of a short-term to those of a more long-term, sustainable nature since 2013. I then show in an empirical model that the probability of non-payment increases substantially for modified mortgages with a previous default history, as it does for those with higher loan-to-value ratios, those with higher interest rates, those outside Dublin and those issued short-term, temporary arrangements.

1 Introduction

Significant progress has been made in the last four years in resolving the Non-Performing Loan (NPL) crisis on Irish bank balance sheets. In the case of the Primary Dwelling House (PDH) mortgage market, arrears have fallen consecutively in every quarter from 2013q3 to 2017q2. Research released today (McCann, 2017) provides a range of insights on the way in which the mortgage market has evolved during this period of recovery. This *Letter* focuses on the analysis therein which relates to mortgage modification.

Such modifications are central to any discussion of the recovery from the Irish NPL crisis. McCann (2017) shows that, of all loans having defaulted during the 2009 to 2016 period but having reduced their arrears balance to less than the equivalent of three missed payments by the end of 2016, 90 per cent did so while having also been modified. This implies that 10 per cent of all such "cured loans" can be classified as "self-cures", i.e. those where the borrower reduced the arrears balance without any modification to the loan's terms on the part of the lender.

A large international literature has focussed on the effectiveness or otherwise of mortgage modifications, with much reference to the Home Affordable Modification Programme (HAMP) which followed the financial crisis in the USA. Agarwal, Ambrose, Ben-David, Chomsisengphet, Piskorski, and Seru (2017) for example showed that the HAMP was associated with lower rate of foreclosures, consumer debt delinquencies, house price declines, and an increase in durable spending in US states where lenders used the programme more intensely. Agar-

[1]E-mail: fergal.mccann@centralbank.ie. I thank Anne McGuinness for her early work on the performance of modified mortgages in Ireland. I thank Darren Greaney for helpful comments on an earlier draft. The views presented in this paper are those of the author alone and do not represent the official views of the Central Bank of Ireland or the European System of Central Banks. Any remaining errors are my own.

wal, Amromin, Ben-David, Chomsisengphet, and Evanoff (2011) focus on the frictions introduced by securitization, showing that bank-held loans are substantially more likely to be renegotiated, as well as being less likely to re-default after modification, than securitized loans. Mayer, Morrison, Piskorski, and Gupta (2014) adopt a different approach, identifying increases in default rates in otherwise-identical portfolios of mortgages which can be explained by the introduction of a mortgage modification programme after the settlement of a US government lawsuit against a failed mortgage lender, suggesting that the possibility of strategic default must be assessed by those introducing modification programmes. Adelino, Gerardi, and Willen (2013) try to explain the low overall tendency of mortgage servicers in the USA to renegotiate mortgages. They find that securitization does not explain the extremely low renegotiation rate on delinquent mortgages during the US crisis, and instead offer that information asymmetries between borrower and lender, combined with the pertinent possibility of re-default, make renegotiation unattractive from a lender's perspective.

In Ireland, McGuinness (2014) has reported on the evolution of mortgage modifications up to end-2013. At that point, the Central Bank of Ireland's MART policy of targets for "sustainable solutions" to financially vulnerable mortgage holders was beginning to have an impact, with the number of permanently modified mortgages in the data available growing from 20,000 to close to 40,000 in the twelve months to December 2013. The analysis of the viability of these modifications carried out by McGuinness (2014) however showed that much work remained to be done: at that point 45 per cent of "permanently modified" mortgages were under-paying relative to the contracted amount due (with 15 per cent making no payment and a further 30 per cent making a payment for an amount less than the contracted instalment due).

Looking in more depth at the characteristics of modified loans in Ireland up to 2013, Danne and McGuinness (2016) show that loans were more likely to receive a modification after filling out an SFS if they had higher incomes, lower falls in income since loan origination, lower likelihood of unemployment, lower debt service burdens, lower non-mortgage indebtedness, less consumption relative to income. Looking at ex-post repayment following on from mortgage modification, the authors then show that these same characteristics are in operation in explaining which modified mortgages are more likely to make full repayments.

In this *Letter* I will focus specifically on three areas. Firstly, I provide a detailed time line of the issuance of modifications of a "temporary" (or short-term) and "permanent" or longer-term, more sustainable type.[2] This classification into two broad modification types does not match up to official Central Bank of Ireland Mortgage Arrears Statistics definitions. However, given that the data analysed here run from 2009 to 2016, the usage of this broad two-category classification allows a consistent interpretation of the data over the entire sample. The figures refer to the five largest mortgage lenders in Ireland, and so cannot be compared direclty to official statistics which refer to all lenders regardless of their size. In total, the sample analysed in this research accounts for close to 90 per cent of the Irish mortgage market.

This analysis shows that, up to 2013, there were more than twice as many mortgages that had been issued at least one short-term arrangement as had been issued a longer-term arrangement. Between 2013 and 2015 however the rate at which each modification type was each altered dramatically, to the point where by 2016 there were more long-term arrangements than short-term arrangements observed in the data. In total, close to one hundred thousand PDH mortgages are shown to have been issued at least one short-term arrangement during the 2009 to 2016 period, with slightly over one hundred thousand having been issued a long-term sustainable arrangement (with it being possible for an individual mortgage to be counted in both categories).

Secondly, I show that the payment performance of modifications varies by the timing of the first modification issuance, with older modifications having a higher probability of non-payment. Both of the above findings point to the improvements in the mortgage modification framework that have been achieved since 2013. Thirdly, I estimate a simple model to explain the loan-level factors associated with successful mortgage modifications, using as a dependent variable the probability that a modified mortgage is repaying its full contracted amount in the last quarter of 2016.

[2] Temporary modifications: repayment reductions, interest only arrangements. Permanent modifications: arrears capitalizations, term extensions, split mortgages, or hybrids thereof.

2 Data

The data used come from Central Bank of Ireland loan level data (LLD) measured at December 2016. The data, which have been collected for financial stability and regulatory purposes since December 2010, are described in detail in McCann (2017). They refer to the five main mortgage lenders in Ireland, covering roughly 90 per cent of the market (AIB, Bank of Ireland, PTSB, KBC, Ulster Bank). The nature ("permanent" versus "temporary"), type and date of issuance of modifications are captured in each six-monthly data file.

Figure 1 plots the timeline of mortgage modifications from 2011q1 to 2016q4. Using the LLD information on the date of issuance of permanent (or those of a longer-term, more sustainable nature) and temporary (shorter-term) modifications, I measure the cumulative number of mortgages at each point in time that had *ever previously* received either a temporary or a permanent modification.[3] For two of the five banks, some temporary modifications that had been issued in the 2008 to 2014 period but had elapsed before January 2015 may be missing from the data, meaning that these figures are likely to understate the true size of the group of ever-modified mortgages (but this data issue should have no bearing on the measurement of permanent modification). The figure shows us that, in the early stages of the mortgage arrears crisis, banks were relying on temporary arrangements such as Interest-Only (IO) periods to attempt to alleviate the repayment difficulties faced by borrowers. By the beginning of 2013, 75,000 mortgages had received a temporary modification, while 40,000 mortgages had received a permanent modification. The rate of change across the two modification types diverged from then on, in line with the focus of the MART policy regime on longer-term sustainable solutions: by 2015q1, the number of permanently modified mortgages surpassed the number of ever-temporarily modified loans. By end-2016, over 100,000 mortgages visible in the LLD had received a permanent modification, while over 90,000 had received a temporary modification.[4]

Figure 2a provides a time line of the number of loans receiving their first modification (whether permanent or temporary) in each year. When all modifications are considered together, it is clear that large volumes of mortgages were indeed processed by the banks in the early years of the financial crisis. In particular, in 2009, 2010 and 2011 over thirty thousand mortgages received their first mortgage modification of any description in each year. The total number of mortgages captured as ever modified in this graph far surpasses the number of restructured mortgages reported in official Central Bank of Ireland statistics due to the fact that currently lapsed temporary arrangements are not counted in the official statistical release. Figure 2b however shows that the picture is very different when permanent modifications alone are considered: close to twenty five thousand mortgages per year received their first permanent modification in 2013 and 2014; before this however the figures were much lower, confirming that the large volumes of mortgages being modified for the first time reported in Figure 2a related mostly to temporary arrangements.

McGuinness (2014) has previously reported that the repayment performance of mortgage modifications improved with time through the 2009 to 2013 period, as lenders improved their capacity to issue modifications and their targeting of the appropriate solution for each borrower improved. In Figure 3a, I report the December 2016 DPD profile of mortgages as a function of the year in which they were first modified. The sum of each bar is the percentage of each year's cohort of newly-modified mortgages that has some arrears at end-2016. For the 2009 and 2010 cohorts, over 25 per cent of these mortgages are in arrears at end-2016, compared to close to 20 per cent for the 2011-2013 group. Looking at the arrears distribution, the share of deep arrears (720+ DPD) is over 10 per cent for the 2009 and 2010 groups, whereas it is under 10 per cent for the post-2011 group and even under 5 per cent for modifications issued in 2013 and 2014. In Figure 3b, I look solely at loans based on the year in which they were first permanently modified. The picture changes substantially, with arrears rates at December 2016 being under 20 per cent in each cohort. The pattern of improved per-

[3] For the purposes of brevity in this paper, the terms "Temporary" and "Permanent" modification are used. These terms do not align directly to current definitions on restructure types reported in official Central Bank of Ireland statistics, but allow for a reliable comparison to be made throughout the whole sample period under study in this paper.

[4] A loan can be counted in both the total number of loans having received a permanent and a temporary arrangement, i.e. the groups are not mutually exclusive.

formance among the 2011-2013 group relative to the 2009 and 2010 cohort still holds, particularly when focussing solely on the group that have ended 2016 in 720+ DPD. It is important to point out that the arrears rates for modified loans charted in this section do not represent "re-default rates" specifically. For loans where arrears balances were not capitalized as part of the modification, it is possible that the loan may be meeting its modified terms, while also retaining the arrears balance that was outstanding when the modification was granted.

3 Explaining the Repayment Probability of Modified Mortgages

Table 1 runs simple linear probability models where the dependent variable takes a one if a mortgage is making repayments equal to or greater than the contracted instalment amount in the last quarter of 2016. The sample frame for these regressions is all mortgages having ever received a temporary or permanent modification in the 2008q2 to 2016q4 period for which we have data. The sample is further restricted to mortgages issued by AIB-EBS, BOI or PTSB, as the default history of mortgages over the period can only be tracked consistently for these banks. This leaves us with an extensive sample of over 126,000 mortgages that have received some form of modification up to end-2016.

In Column (1) it is confirmed that many of the factors that were shown in McCann (2017) to be relevant for entry to mortgage arrears in 2016 Q4 are also relevant in explaining the propensity to fully repay among modified mortgages. Loans with a higher CLTV, SVR mortgages, tracker mortgages, loans with higher interest rates, loans outside Dublin, and loans issued in the pre-crisis period all have a lower probability of making full repayments. Unlike in the full sample of mortgages, loans on a multi-loan facility have a higher probability of full repayment. In Column (2) I show that, among the group of modified loans, loans that are either currently or were previously on a temporary modification have a lower probability of full repayments than those on a permanent modification. The differentials are 6.6 and 9 percentage points, respectively. In Column (3) I provide further evidence of persistence in financial distress: controlling for the full set of variables from Columns (1) and (2) there is a statistically significant and economically very large coefficient on the "Ever in Default" term: those having ever been in default between 2008 and 2016 are much less likely than other modifications to be making full repayments.

In Column (4) I confirm that the non-linearity in the housing equity effect for mortgage arrears uncovered in McCann (2017) is also relevant in the case of modified mortgages: loans with CLTV above 150 have three times lower probability of full repayment than those between 110 and 150, who themselves have a negative coefficient twice as large as those between 95 and 110. Finally, in Column (5) I delineate the types of modification offered to Irish mortgage holders in more detail, showing that those on "split mortgage" arrangements, where part of the principal is placed into a warehouse, have the highest probability of repayment relative to the base category, while the worst performing modification types are Interest Only arrangements and cases where borrowers had a previous temporary modification but are currently classified as Not Forborne.

4 Conclusion

Mortgage modification has a central explanatory role in the recent reduction in mortgage arrears experienced in Ireland. Following significant supervisory intervention and increased investment in resources from lenders, the scale and nature of mortgage modification changed dramatically from 2013 onwards. This *Letter* provides insights on the way in which the composition of modifications, between those of a more "temporary" nature such as interest-only periods, and those of a more long-term, sustainable nature, has changed over time. The scale of the modifications issued is also noteworthy, with official Central Bank of Ireland statistics showing that at June 2017, 120,398 PDH mortgages were classified as restructured (from a total PDH market of 732,439).

The *Letter* also documents how the performance of modification has varied as a function of the year in which loans were first issued a modification. In general, modifications issued before 2011 have been more likely to be in longer-term arrears by the end of 2016 than those issued since then.

An empirical model then assesses the loan-level characteristics associated with the probability of

a modified loan fully repaying its contracted instalment at the end of 2016. The analysis highlights the importance of previous default experience, which is very closely related to non-payment of modified mortgages, highlighting the persistence of financial difficulties for many households. Permanent (or longer-term, more sustainable) modifications are associated with higher repayment probabilities than modifications of a temporary nature. Other factors more generally associated with mortgage payment difficulty such as higher loan to value ratios, higher interest rates, loan origination cohort effects, geographic factors and interest rate type effects are all shown to have explanatory roles when focussing specifically on the repayment probabilities of modified mortgages.

References

Adelino, M., K. Gerardi, and P. S. Willen (2013): "Why don't Lenders renegotiate more home mortgages? Redefaults, self-cures and securitization," *Journal of Monetary Economics*, 60(7), 835 – 853.

Agarwal, S., G. Amromin, I. Ben-David, S. Chomsisengphet, and D. D. Evanoff (2011): "The role of securitization in mortgage renegotiation," *Journal of Financial Economics*, 102(3), 559–578.

Agarwal, S., G. Amromin, I. Ben-David, S. Chomsisengphet, T. Piskorski, and A. Seru (2017): "Policy Intervention in Debt Renegotiation: Evidence from the Home Affordable Modification Program," *Journal of Political Economy*, 125(3), 654–712.

Danne, C., and A. McGuinness (2016): "Mortgage modifications and loan performance," Research Technical Papers 05/RT/16, Central Bank of Ireland.

Mayer, C., E. Morrison, T. Piskorski, and A. Gupta (2014): "Mortgage Modification and Strategic Behavior: Evidence from a Legal Settlement with Countrywide," *American Economic Review*, 104(9), 2830–2857.

McCann, F. (2017): "Resolving a Non-Performing Loan crisis: The ongoing case of the Irish mortgage market," Research Technical Papers 10/RT/17, Central Bank of Ireland.

McGuinness, A. (2014): "Mortgage Repayments after Permanent Modification," Economic Letters 07/EL/14, Central Bank of Ireland.

Tables and Figures

Table 1: Which modified mortgages are fully paying in late 2016??

	Dependent variable: probability of full repayment (or more)				
	Full_Pay				
	(1)	(2)	(3)	(4)	(5)
Ever in Default			−0.287***	−0.284***	−0.320***
CLTV	−0.002***	−0.002***	−0.001***		−0.002***
SVR	−0.092***	−0.089***	−0.054***	−0.046***	−0.050***
Tracker	−0.037***	−0.050***	−0.048***	−0.039***	−0.009
Interest Rate	−0.126	−0.577***	−0.899***	−0.710***	−0.119
Dublin	0.024***	0.026***	0.020***	0.020***	0.019***
Married	0.009***	0.007***	0.003*	0.007***	0.0001
Multi-loan	0.017***	0.012***	−0.002	−0.006***	0.004**
Modification Group; base group Permanent Mods					
Temp Now		−0.066***	−0.090***	−0.087***	
Temp Past		−0.090***	−0.167***	−0.161***	
Loan Origination Groups relative to pre-2003 loans					
(2003,2005]	0.048***	0.051***	0.034***	0.015***	0.031***
(2005,2008]	0.064***	0.067***	0.047***	0.029***	0.039***
(2008,2012]	0.100***	0.105***	0.044***	0.021***	0.048***
(2012,2016]	0.103***	0.097***	0.001	−0.009	−0.010
LTV Groups relative to LTV less than 80					
(80,95]				−0.026***	
(95,110]				−0.042***	
(110,150]				−0.104***	
(150,250]				−0.355***	
Forbearance Types, base group Arrears Capitalizations					
IO					−0.130***
Not Forborne					−0.161***
Other					0.042***
Reduced Payment					0.010**
Split					0.077***
Term Extension					−0.097***
Constant	1.001***	1.055***	1.178***	1.104***	1.169***
Observations	127,312	127,312	126,541	126,299	126,541
R^2	0.066	0.081	0.214	0.215	0.219

Note: *p<0.1; **p<0.05; ***p<0.01
Sample is all loans with any previous modification as of end-2016

Figure 1: Number of mortgages having ever been modified at each date, by modification type

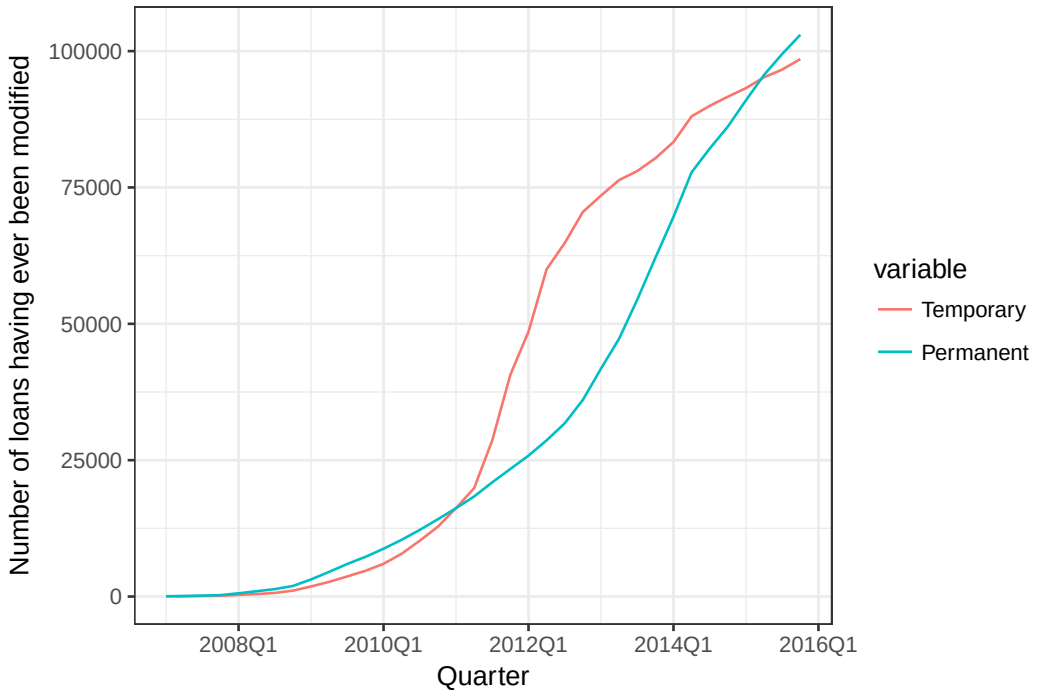
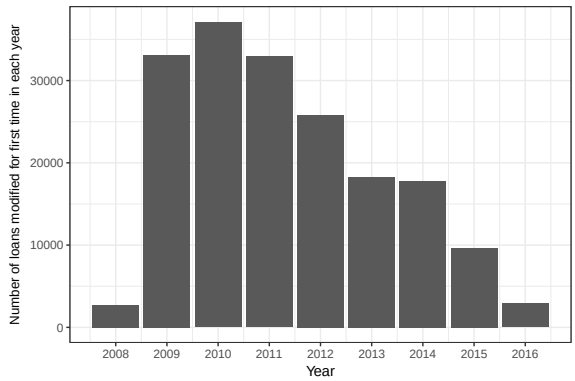


Figure 2: Number of loans modified for the first time, by year of first modification

(a) All modifications



(b) Permanent modifications only

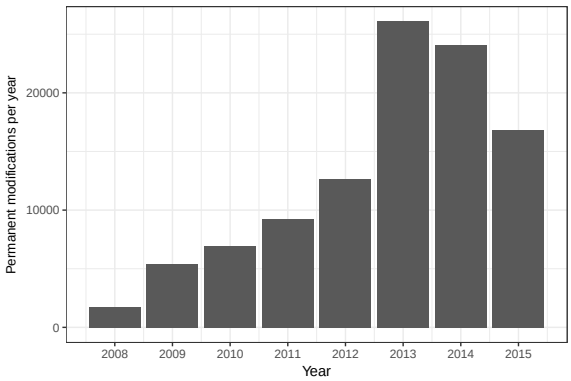
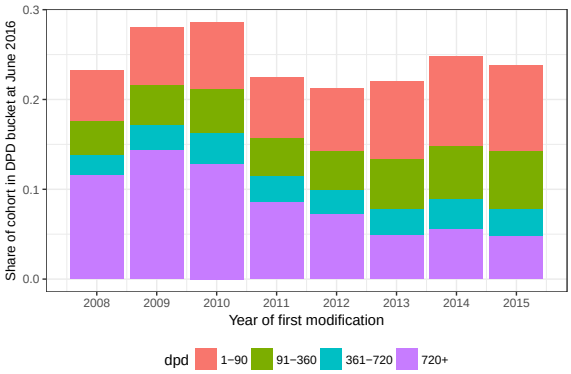


Figure 3: Current loan performance as a function of year of first modification

(a) All modifications



(b) Permanent modifications only