



ESRI RESEARCH NOTE

The Financial Crisis and the Changing Profile of Mortgage Arrears in Ireland

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THE FINANCIAL CRISIS AND THE CHANGING PROFILE OF MORTGAGE ARREARS

* Mike Fahy, Conor O'Toole and Rachel Slaymaker¹

1. INTRODUCTION

Understanding which households go into mortgage arrears during both boom and bust periods in Ireland is of critical importance to ensure suitable policies are deployed to safeguard future financial stability. Many of the difficulties in Ireland arose from the loosening of underwriting standards by financial institutions. This led to excessive household leverage ratios and provided households with limited buffers with which to absorb shocks (McCarthy and McQuinn, 2017; Lydon and McCann, 2017). The joint effects of labour market difficulties and large falls in house prices led to a situation where nearly one-in-five mortgage loans was in arrears at the height of the crisis (McCarthy, 2014).

To shed light on the drivers of the arrears crisis, a series of studies have explored the relative effects of equity shocks and affordability shocks on Irish mortgage holders. Using loan-level data from the Central Bank of Ireland, Kelly and O'Malley (2016) and Lydon and McCarthy (2013) estimate double-trigger type models which find a role for both the loan-to-value ratio and the unemployment rate in driving mortgage default. These studies, and notable others such as Gaffney et al. (2014), formed the basis for the mortgage stress test framework for loan-loss forecasting that the Central Bank now uses. Recent research by O'Malley (2018) also provides judicial and legislative motives for default.

One challenge with existing datasets has been a lack of up-to-date information on borrower income which is unavailable in loan-level data. To address this gap in the literature, McCarthy (2014) undertook a specific survey to capture current income information for mortgage holders and link it back to the loan data. This research found that labour shocks and fragile employment explained a large share of arrears cases in Ireland.

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While these studies have provided a very thorough explanation of the arrears crisis since 2010, no research has explored the difference in the type of household that went into arrears during the systemic crisis relative to the pre-crisis period. This is mainly due to the lack of loan-level data for the pre-crisis period. One notable exception is McCarthy and McQuinn (2011) who focus on income in the period just before the severe crisis period 2009/2010. However, documentation of the change in mortgage arrears over the crisis period in terms of household composition and other characteristics is still missing.

To address this gap in the literature, in this Research Note, we build on the existing work by exploring whether the composition of borrowers who went into arrears during the height of the financial crisis was different from those who were in arrears in the pre-crisis period. We draw on the Irish Survey of Income and Living Conditions (SILC) which began in 2003 and is conducted by the Central Statistics Office (CSO) on an annual basis. Most importantly, this dataset contains a wealth of information on both mortgage debt and socio-economic characteristics, enabling us to explore which types of household experienced mortgage distress both before and during the crisis.

There are good economic reasons to expect *a priori* that the types of household who experience mortgage repayment distress in normal economic times may differ from those who are affected during a systemic crisis following an extensive credit boom. For example, in a more stable economic environment, re-employment probabilities following a job loss are likely to be greater. Individuals most likely to experience arrears problems during normal economic times may be those whose skill profile does not fit the labour demanded, those who are in low paid or fragile employment, and those suffering from adverse personal circumstances such as ill health or family problems.

In a systemic crisis, where leverage ratios have increased considerably in the preceding period, labour shocks may also permeate to groups in the economy that would not be affected in normal times. This may give rise to a very different profile of borrowers who enter arrears. Understanding which households will likely experience distress across the economic cycle is critical to designing structural policies to moderate loan arrears in good and bad times.

We find that in the pre-crisis period, those households in mortgage arrears were more likely to have suffered very severe economic, social or other personal difficulties including ill health or divorce or separation. Arrears cases were also more likely to come from the lower end of the income distribution. Housing equity considerations (negative equity) had no bearing on default as house prices

were rising. In contrast, during the systemic crisis, equity considerations played a role and defaults increased to a greater extent amongst higher income groups and those without health or other personal difficulties.

From a policy perspective, it is important to understand what the drivers of default will be in non-crisis times. As the Irish economy recovers, it is likely that there will be new default cases. However, the reasons for these may be more down to unanticipated personal difficulties rather than broad equity or labour market shocks. This may require a different policy response for these households.

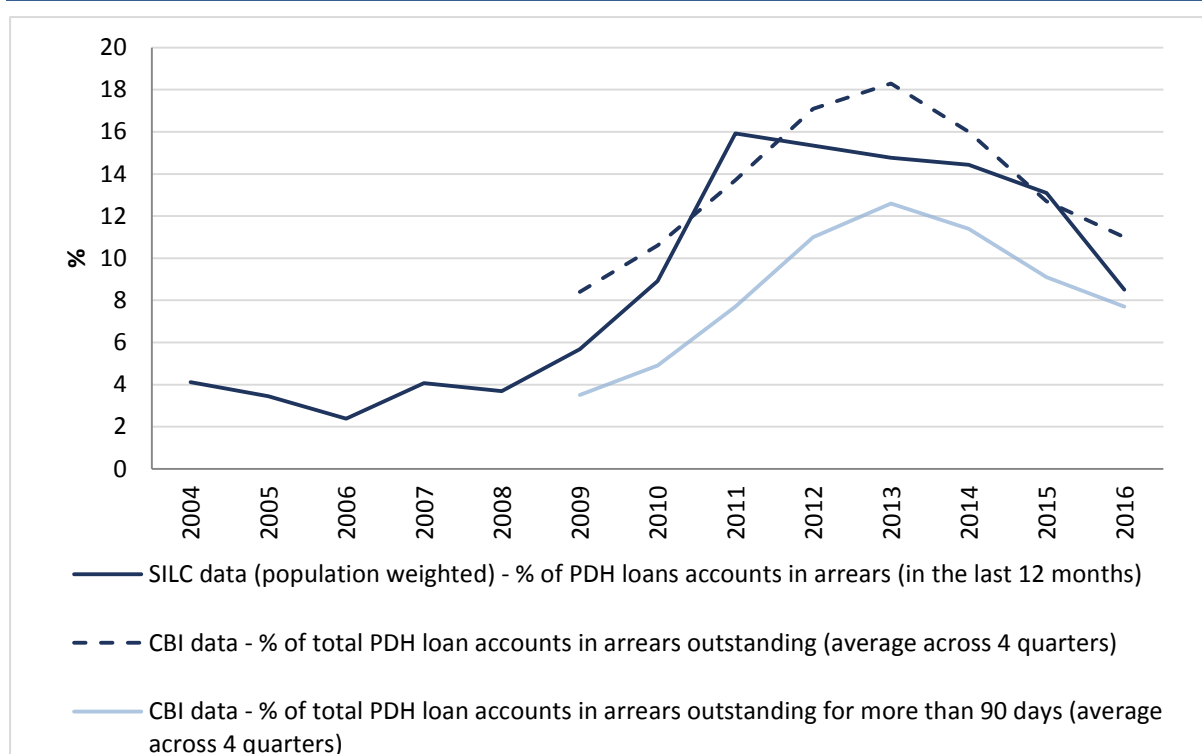
This Note is structured as follows. Section 2 describes the data used in the analysis. Section 3 profiles the types of households in arrears before and during the financial crisis. Section 4 considers whether financial distress for households goes beyond mortgage arrears and also affects their repayment of other loan items and bills and Section 5 concludes.

2. BACKGROUND AND DATA

To understand the household types which typically fall into mortgage arrears we draw on the Survey of Income and Living Conditions (SILC). The SILC provides a comprehensive micro-level dataset surveying income and living conditions across different types of households (see CSO, 2016). As a survey of private households, it is voluntary and is carried out under EU legislation. In Ireland, the survey is conducted on an annual basis by the CSO and, while it is primarily focused on collecting information used to derive indicators of poverty, deprivation and social exclusion, the survey also contains a significant amount of information for each household on home ownership, details of mortgage debt, monthly mortgage instalments and arrears. In particular, we use information on whether households went into mortgage arrears in the last 12 months as our indicator of mortgage arrears.

While previous work (Kelly and O'Malley, 2016; Lydon and McCarthy, 2013) has used loan-level data to document the extent of arrears in Ireland, these papers focus exclusively on the post-crisis period. Furthermore, as these are loan-level data, they do not contain household level characteristics. Using SILC data from 2004-2013 therefore provides us with a unique opportunity to examine the incidence of arrears across different types of households and to explore whether the composition of borrowers who were in arrears during the height of the financial crisis was different from those who went into arrears in the pre-crisis period.

FIGURE 1 PRIVATE DWELLING HOMES MORTGAGE ARREARS IN IRELAND: A COMPARISON BETWEEN SILC AND CBI DATA

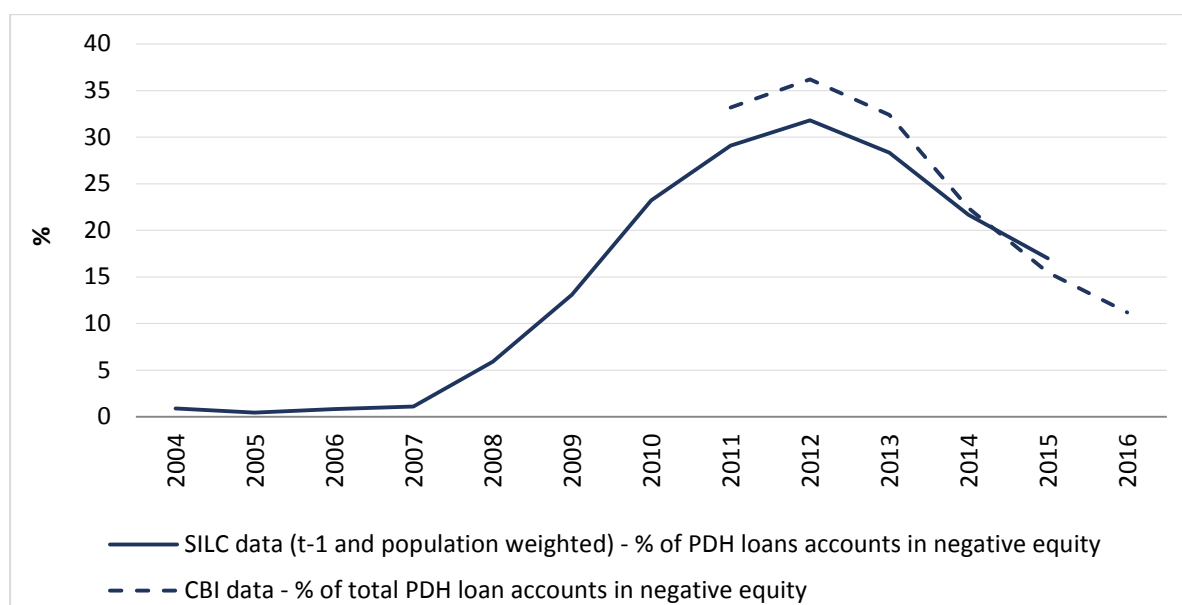


Source: Central Statistics Office EU-SILC data, and Central Bank of Ireland, Residential Mortgage Arrears data.

Before we use the SILC data for any analysis, we first want to examine how well the arrears information correlates with the equivalent Central Bank of Ireland data used in existing studies. In Figure 1 we compare the proportion of households in mortgage arrears in the SILC data² to both the Central Bank of Ireland’s private dwelling homes (PDH) total arrears outstanding data series and the CBI’s over 90 days outstanding data series. The trend in the SILC mortgage arrears data is very similar to the trends in both the CBI’s over 90 days outstanding data series and the CBI’s PDH total arrears outstanding series. In fact from 2009 to 2016, we find that there is an 82 per cent correlation between the CBI’s 90 days in arrears data series and the SILC arrears data, and an 88 per cent correlation between the CBI’s total outstanding arrears series and the SILC arrears data.

² Information on mortgages in the SILC data refers only to private dwelling homes; it does not contain information on buy-to-let or investment properties or on second homes.

FIGURE 2 NEGATIVE EQUITY: A COMPARISON BETWEEN SILC AND CBI DATA



Source: Central Statistics Office EU-SILC data, and Central Bank of Ireland data.

In Figure 2 we compare the proportion of households in negative equity in the SILC data to the equivalent Central Bank of Ireland figures.³ We can see from Figure 2 that the correlation between the two series is very high, with a correlation coefficient of 99 per cent during the period 2011-2014 for which we have data for both series.

The strong correlations between the SILC and CBI data, both in terms of the share of households in arrears and the share of households in negative equity, provides a solid empirical basis for using the SILC data to analyse and profile the demographic and other household level characteristics behind mortgage arrears in Ireland. We can, thus, provide new additional insights into the evolution of arrears over time in Ireland. Our particular focus is on examining the periods before which Central Bank data are available.

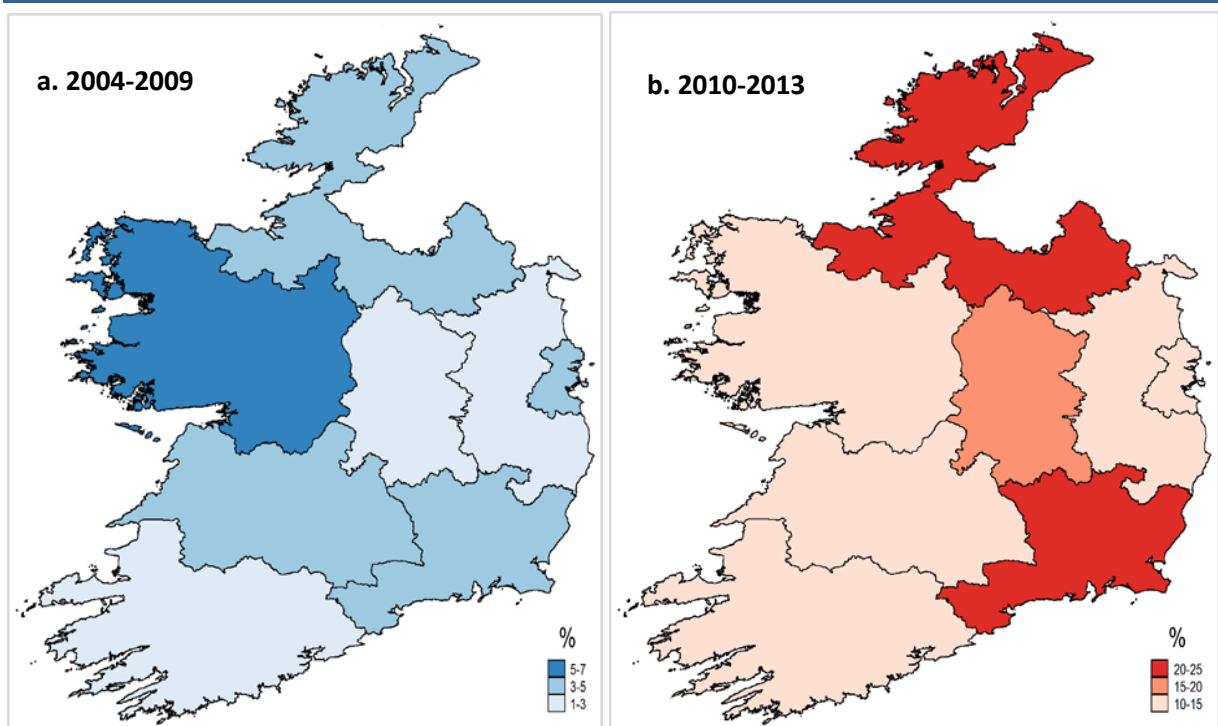
In Figure 3 we plot the regional variation in mortgage arrears during non-crisis and crisis years. For the purposes of our analysis throughout this Note, we define the non-crisis period as 2004-2009 and the crisis period as 2010-2013. While the financial crisis began in 2008, in Ireland the mortgage arrears crisis really began to take hold from 2010 onwards. Prior to the crisis there was no significant geographical variation in the proportion of households in arrears, with the arrears

³ We compare the SILC data with the CBI series of the previous year because the CBI negative equity data are reported at the end of Q4 each year, whereas in SILC, respondents are interviewed throughout the year and asked to report on the previous 12 months. E.g. we compare CBI Q4 2011 with SILC 2012.

rate varying between 1 per cent to 4.5 per cent for all regions. An exception to this trend is seen in the Western region, which had a slightly higher rate of 6.7 per cent (see Figure 3a).

In contrast, in Figure 3b we observe significant geographical variation in the arrears rate during the crisis period (2010-2013). Although we observe a higher arrears rate in all regions, we note the rate was substantially higher in the Border and South-East regions where just over one-fifth of households were in arrears, and the Midland region with just under 20 per cent of households. These areas, in particular, saw a huge construction boom in the early 2000s, with house prices increasing substantially relative to incomes. The economies in these areas were also heavily reliant on domestic, non-traded products and firms, meaning that these areas were particularly vulnerable to large unemployment and income shocks during the crisis.

FIGURE 3 SHARE OF HOUSEHOLDS IN MORTGAGE ARREARS BY REGION



Source: ESRI and Department of Finance analysis of EU-SILC data.

In Figure 4 we explore the correlation in the regional patterns of both unemployment and negative equity in Ireland, as unemployment and equity shocks are shown to be two important drivers of arrears in the existing literature. Figure 4a reinforces the finding that between 2010 and 2013 the Midland, Border and South-East regions had much higher levels of mortgage arrears, ranging from 19 per cent to 21 per cent, compared to 10 per cent to 13 per cent in other

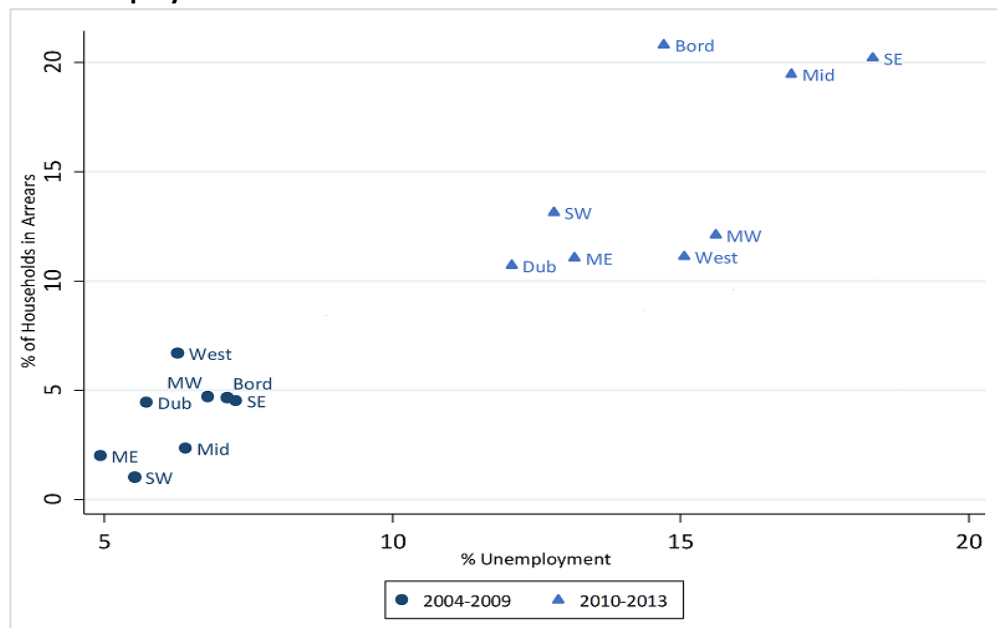
regions. During this period, the share of households in negative equity was particularly high in the Midland and to a lesser extent in the Border region. Figure 4b firstly shows the large increases in unemployment in all regions between the pre-crisis and crisis periods. Secondly it shows that in the South-East, unemployment, in particular, was high between 2010 and 2013, at approximately 18 per cent. These correlations suggest that the reasons why households fall into arrears may differ across regions.

FIGURE 4 THE RELATIONSHIP BETWEEN ARREARS, NEGATIVE EQUITY AND UNEMPLOYMENT BY REGION

a) Negative Equity 2010-2013



b) Unemployment 2004-2009 and 2010-2013



Source: ESRI and Department of Finance analysis of EU-SILC data.

3. PROFILING ARREARS ACROSS HOUSEHOLDS BEFORE AND DURING THE CRISIS

In this section we explore whether the composition of borrowers who were in arrears during the height of the financial crisis was different from those who were in arrears in the pre-crisis period. Table 1 presents the predicted probability that a household is in arrears for a series of household characteristics in the non-crisis period (2004-2009) and crisis period (2010-2013), conditional on controlling for other household characteristics.⁴ Extensive mortgage modification programmes came into operation in Ireland after 2013 (see Danne and McGuinness, 2016; and McCann, 2017). As these modification programmes are not captured in the SILC data, we exclude households in the 2014-2016 waves for the remainder of our analysis.⁵ This is due to the fact that while these households may no longer be in arrears due to the modifications, they may still be in significant financial distress. In any case, our primary focus in this Note is to explore the differences between the composition of borrowers in arrears prior to and during the crisis, for which we do not require data from these more recent waves.

Focusing first on the non-crisis years, it is clear that higher predicted probabilities of arrears are associated with particular high risk groups, such as those without third-level education, households in the lowest 40 per cent of the income distribution and especially single adult households with children. In addition, we can see that households who suffered an employment, marital or health shock were more likely to be in arrears. Between 2004-2009, controlling for other characteristics, unemployed households had an 11 per cent likelihood of being in mortgage arrears, along with 4 per cent likelihood for those who had suffered divorce, separation or became widowed, and a 15 per cent chance for households who reported experiencing bad health.

Turning now to the crisis years, from the second column of Table 1 it is clear that the likelihood of being in arrears increased for all household types. However, from the final column of Table 1 we observe much larger relative increases in arrears for households with substantially different characteristics. More precisely, the number of employed households in arrears increased five-fold, while younger, healthier, and better educated households saw the largest rise in arrears, with a seven-fold increase for households with third-level education.

⁴ We estimate probit regressions and report the predicted probabilities that a household of that characteristic is in arrears, holding the other variables at their means.

⁵ The SILC data do not capture modifications such as arrears capitalisations and term extensions.

Finally, as shown in the final column of Table 1, we observe an almost three-fold rise in the arrears rate for households with a loan-to-value ratio greater than 80 or, put differently, we see the importance of the equity channel coming into play in the crisis period. Exploring this in more detail, in Figure 5 we see that prior to 2009 virtually no households were in negative equity. This corresponds with our findings in Table 1 that households in arrears in the non-crisis period tended to be those who had suffered an adverse employment, marital or health shock. After 2009 there was a sharp rise in the share of households in negative equity, and this was much greater for households in arrears, peaking at 45-46 per cent between 2011 and 2013. Households in negative equity may be more likely to go into arrears for several reasons. First, a household may decide to stop making mortgage payments when the value of the debt is greater than the value of the property, a so-called strategic default. Second, a household faced with both a negative equity and an affordability shock may be unable to make mortgage payments and unable to sell the property, forcing them into arrears.

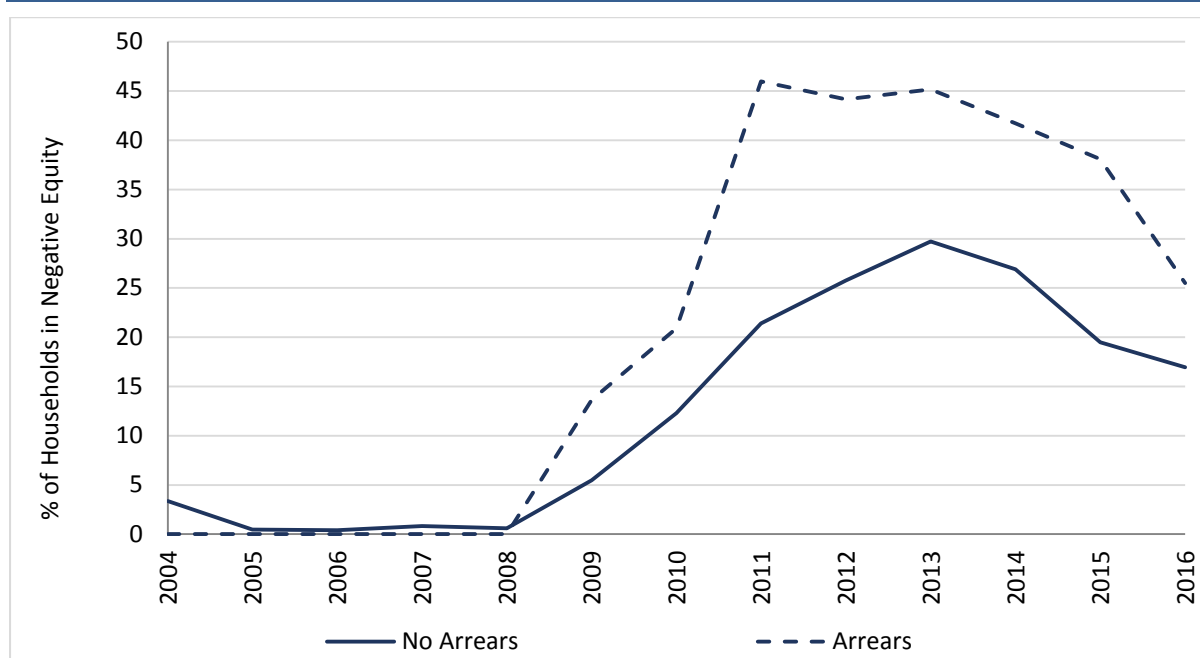
TABLE 1 MORTGAGE ARREARS BY HOUSEHOLD SOCIO-ECONOMIC CHARACTERISTICS 2004-2013

Characteristic	Predicted Probability of Arrears 2004-2009	Predicted Probability of Arrears 2010-2013	Percentage Point Difference	Percentage Change (%)
Age				
18-35	0.016	0.135	0.119	743.8
36-50	0.018	0.083	0.065	361.1
51+	0.020	0.105	0.085	425.0
Marital Status				
Married	0.015	0.090	0.075	500.0
Single	0.021	0.109	0.088	419.0
Divorced/Separated/Widowed	0.040	0.169	0.129	322.5
Employment Status				
Employed	0.014	0.086	0.072	514.3
Unemployed	0.108	0.217	0.109	100.9
Other	0.031	0.128	0.097	312.9
Education				
Primary	0.027	0.185	0.158	585.2
Secondary	0.025	0.108	0.083	332.0
Third-level	0.011	0.089	0.078	709.1
Household Composition				
1 adult, no children	0.012	0.048	0.036	300.0
1 adult, with children	0.087	0.105	0.018	20.7
2 adults, no children	0.011	0.069	0.058	527.3
2 adults, with children	0.023	0.140	0.117	508.7
Health Status				
Very good/good	0.016	0.091	0.075	468.8
Fair	0.045	0.189	0.144	320.0
Bad/very bad	0.151	0.306	0.155	102.6
Income Distribution				
<p(40)	0.044	0.278	0.234	531.8
p(40)-p(60)	0.030	0.153	0.123	410.0
>p(60)	0.013	0.069	0.056	430.8
Unconditional Proportion of Households in Arrears (%)	0.032	0.128	0.096	300.0
Unconditional Proportion of Households with LTV>80 (%)	0.039	0.148	0.109	279.5
No. Obs.	6,646	4,335		

Source: ESRI and Department of Finance analysis of EU-SILC data.

Note: For Columns 1 and 2 we estimate probit regressions and report the predicted probability of arrears for each household characteristic, while holding the other variables at their means. All coefficients are statistically significant at the 1 per cent level, except the coefficient on '1 adult, no children' in the 2004-2009 period which is significant at the 5 per cent level. In addition, in the last two rows we present the unconditional proportion, i.e. the simple mean, of households in arrears and with an LTV>80 as additional information. The mean proportion of households with an LTV>80 is based on a smaller sample (4,055 and 2,966 observations respectively) due to missing data.

FIGURE 5 THE RELATIONSHIP BETWEEN NEGATIVE EQUITY AND ARREARS



Source: ESRI and Department of Finance analysis of EU-SILC data

Note: In the period prior to 2008, the actual level of negative equity in Ireland was (near) zero due to rising house prices. We therefore have (near) zero values for these years in our data. Due to the small number of households in arrears in certain years prior to 2009, these observations are simply reported as 0 for 2004-2008.

4. MORTGAGE ARREARS AND BROADER HOUSEHOLD FINANCIAL DISTRESS

In addition to examining the differences between the types of households going into arrears in the non-crisis and crisis periods, one additional question of interest is to what extent distress in the mortgage market is accompanied by broader household financial difficulties. In addition to the basic socio-economic characteristics presented so far, the SILC data also contain a series of information on broader household financial distress. This provides us with the unique opportunity to assess the extent to which distress in the mortgage market was accompanied by broader household financial distress.

In Table 2 we can see that in the crisis period, controlling for other characteristics, more than one-third of households in arrears on their utility bills and 45 per cent of those in consumer loan arrears were also in mortgage arrears. Furthermore, one-fifth of households having difficulty or great difficulty making ends meet, 14 per cent of households unable to save income regularly, and 17 per cent of households who were unable to take a family holiday, were in arrears in the crisis period. These findings are significant as they clearly show the existence of additional broader household financial distress during the crisis period, over and above the issue of being in mortgage arrears. However, from the final column of Table 2, it is also clear that we observe larger relative increases in arrears for

households not in broader financial difficulties. This is consistent with our findings in Table 1 that during the systemic crisis, the risk of falling into arrears spread throughout society.

TABLE 2 HOUSEHOLDS IN MORTGAGE ARREARS 2004-2013 – BROADER FINANCIAL DISTRESS

Characteristic	Predicted Probability of Arrears 2004-2009	Predicted Probability of Arrears 2010-2013	Difference	Percentage Change (%)
Utilities Arrears in last 12 months				
Yes	0.122	0.349	0.227	186.1
No	0.007	0.096	0.089	1,271.4
Consumer Loan Arrears in last 12 months				
Yes	0.061	0.447	0.386	632.8
No	0.007	0.104	0.097	1,385.7
Can Regularly Save Some Income				
Yes	0.006	0.114	0.108	1,800.0
No	0.011	0.141	0.13	1,181.8
Ability to Make Ends Meet				
With great difficulty/difficulty	0.024	0.19	0.166	691.7
With some difficulty	0.008	0.100	0.092	1,150.0
Fairly easily/easily	0.005	0.101	0.096	1,920.0
Very easily	0.004	0.110	0.106	2,650.0
Ability to take Annual Family Holiday				
Yes	0.007	0.112	0.105	1,500.0
No	0.017	0.167	0.15	882.4
No. Obs.	6,645	4,333		

Source: ESRI and Department of Finance analysis of EU-SILC data.

Note: For Columns 1 and 2 we estimate probit regressions and report the predicted probability of arrears for each household characteristic, while holding the other variables at their means. These regressions also include the household characteristics shown in Table 1. All coefficients are statistically significant at the 1 per cent level, except the coefficient on 'yes-consumer loan arrears' in the 2004-2009 period which is significant at the 5 per cent level, and on 'very easily able to make ends meet' in the 2004-2009 period which is not statistically significant.

5. CONCLUSION

In this Research Note we provide an examination of the socio-economic characteristics of borrowers in mortgage arrears in Ireland. More specifically, we explore the change in composition of these borrowers between those in arrears in the pre-crisis years and those who went into arrears during the financial crisis.

In Section 2 we show that the SILC data are highly correlated with the CBI data on Irish mortgage arrears, and therefore provide a suitable dataset with which to analyse and profile the demographic and other household level characteristics

behind mortgage arrears in Ireland over the period 2004-2013. From a regional perspective, we present descriptive evidence showing that prior to the crisis there was no significant geographical variation in the proportion of households in arrears; however, in the crisis years we show mortgage arrears rates were significantly higher in the Border, Midland and South-East regions. Taking a closer look at the equity and unemployment channels which act as a catalyst for a household falling into arrears, we show that the relative importance of these channels differs across regions.

In Section 3 we find that prior to the crisis, households in mortgage arrears were typically those who had suffered unemployment, marital and health shocks, as well as particular risk groups such as lone parents. However, during the systemic crisis, the risk of falling into arrears spread throughout society, and in fact healthier, younger, more highly educated, employed households saw the largest increases in incidence of arrears.

Finally, in Section 4 we show that households in mortgage arrears also suffer from broader financial distress. In particular, households in arrears on utility bills and consumer loans have a much higher likelihood of also being in mortgage arrears. However, during the systemic crisis, the risk of falling into arrears spread throughout society, and in fact households not in consumer loan or hire purchase arrears, as well as those able to make ends meet, saw the largest increases in incidence of arrears.

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