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Debt giveth and debt taketh away: mortgage debt burdens in Ireland

Tara McIndoe-Calder[1]

Abstract

Households reduced their debt levels by a fifth between 2008 and 2014. This pattern of deleveraging differs markedly across the age distribution. Young borrowers (born after 1970) reduced their debt levels by 13% compared to 35% for Older borrowers (born before 1960). The difference arises because Young borrowers have larger mortgages - and longer remaining loan durations, and therefore a greater share of repayments is an interest payment. Mortgage repayments for the typical tracker borrower have fallen by 34% since 2008. SVR borrowers' repayments have fallen by just 9%. Relative to Older borrowers, Young borrowers are more likely to be on a tracker rate, reflecting the mortgage products available at loan origination. However, Young borrowers continue to face a heavy debt-burden and are at risk of higher interest rates in the future.

1 Introduction

Household deleveraging has been a central theme of the Irish economic adjustment since 2008. Whilst there has been a substantial decline in *aggregate* private household debt, 20% between 2008 and 2014 (Quarterly Financial Accounts 2015), a new household dataset, from Lydon & McIndoe-Calder (2017), shows that there are significant differences in this adjustment across age cohorts.[2]

Deleveraging describes the process of reducing debt burdens. Here I focus exclusively on property debt. Property debt burden can be measured as the ratio of:

- mortgage debt stock to income (MDTI); and/or
- mortgage debt service (repayments) to income (MDSR).

[1]Corresponding author: tara.mcindocalder@centralbank.ie. The views expressed in this paper are those of the author only and do not necessarily reflect the views of the Central Bank of Ireland. This Economic Letter has been cleared for publication by Gerard O'Reilly. I thank John Flynn, Jane Kelly, Mary Cussen, Reamonn Lydon and Diarmaid Smyth who provided useful comments. All remaining errors are my own.

[2]Lydon & McIndoe-Calder (2017) combine 2013 HFCS data with a number of granular datasets on assets, debt and income to simulate household balance sheets over time: backwards from 2013-2005 and forwards from 2013-2014. This technique preserves the rich heterogeneity of the HFCS data, currently a point in time dataset, over the period 2005-2014.

This letter examines trends in household disposable income, outstanding property debt and debt repayments for three groups: Young, Middle and Older borrowers whose head of household in 2008 was aged up to 37, 38 to 48 and over 49, respectively.[3]

Table 1: Borrower cohorts

Cohort	Birth year	Age in 2008	Age in 2014
Young	after 1970	up to 37	up to 43
Middle	1960-1970	38-48	44-54
Older	pre-1960	49+	55+

"Young borrowers" are households whose head was born after 1970 and who typically borrowed for the first time in the five years up to 2008; "Middle borrowers" are households whose heads were born in the 1960s and had taken out their first mortgage some time before 2008, but still had a substantial amount of principal to repay going into the crisis – often compounded by having taken out additional mortgage debt (equity releases and/or buy-to-let loans) during the boom; and "Older borrowers" are households whose heads were born prior to the 1960s and who took on little additional debt in the build up to 2008 (Table 1).

Previewing the results, I find there are three reasons for the differential declines in the MDTI and MDSR ratios across the three age cohorts between 2008 and 2014. First, reflecting the evolution of mortgage products over time, there are differences in mortgage loan characteristics across the age cohorts. In particular, Young borrowers with tracker mortgages, have benefited from a high degree of pass through of the interest rate declines since 2008. Second, also reflecting differences in the characteristics of available mortgages held, debt does not amortise at the same rate for all households; this is particularly true of the most indebted Young households who took out longer-term mortgages close to the peak.[4] Third, the evolution of disposable incomes has varied in magnitude and timing. Across the three cohorts, Young and Older borrowers, as opposed to Middle borrowers, have seen slower recoveries in disposable income – despite similar peak to trough falls across the three groups.

2 Mortgage burden developments

To understand the evolution of the debt burden since 2008 it is necessary to analyse income, debt and debt service developments. All three variables are recorded at the household level; income is annual labour income and social welfare transfers net of tax; debt accounts for all outstanding property debt (including household main residence (HMR) and buy-to-let (BTL) properties); debt servicing comprises the annual repayments of interest and capital on outstanding property debt.[5] Income, debt and debt repayments are measured in levels and indexed, 2005=100. Indexation allows examination of relative changes in the levels of the three variables. When combined these variables yield standard measures of the property debt burden: MDTI and MDSR.

Table 2 (using the survey dataset) shows that at the median across all households the MDTI and MDSR ratios remained almost constant between 2008 and 2014. This masks important changes in these ratios and their components between age cohorts and over the time period. Between 2008 and 2014 MDTI

[3] By 2014 less than 2% of all borrowers were over 65 i.e. the vast majority of Older borrowers were still of working age by the end of the period of interest.

[4] Whilst this is, in part, to be expected given mechanical amortisation rates and the life cycle hypothesis, significant changes in loan terms at origination between 2004 and 2008 accentuate these cohort differences in Ireland.

[5] I focus here exclusively on property debt, the HFCS data also contains information on the 2013 holdings of non-property debt by Irish households.

ratios have improved for all three groups, albeit at different rates: only marginally for Young borrowers but more substantially for Middle and Older borrowers. Looking to MDSR ratios shows some improvement for the Young and Middle age cohorts yet a deterioration for the Older group, however, the MDSR still remains lowest for this group. The median[6] is reported throughout as this is more appropriate than the mean when the distribution is particularly skewed. Figure 1 examines trends in the debt components in more detail.

Table 2: Mortgage debt burden ratios, by birth year cohort (median)

	Young Borrowers	Middle Borrowers	Older Borrowers	Total
Mortgage debt to income ratio (2008)	3.52	2.38	1.23	2.78
Mortgage debt to income ratio (2014)	3.46	2.06	0.98	2.71
Mortgage debt service ratio (2008)	0.24	0.20	0.14	0.21
Mortgage debt service ratio (2014)	0.21	0.18	0.16	0.20
Interest share of mortgage repayment (2008)	0.58	0.46	0.38	0.51
Interest share of mortgage repayment (2014)	0.41	0.29	0.25	0.35
Share of households (%)	52.24	30.67	17.09	100

Source: HFCS-SIM, Lydon & McIndoe-Calder (2017).

Note: Figures conditional on having property debt and weighted using representative population weights.

Income changes

A key benefit of the dataset is that household disposable income is generated using granular administrative data over time. It is important to understand income developments (solid blue lines in Figure 1) as whilst peak to trough income falls have been similar, the trough was reached at different *times* and the recovery occurred at differential *rates* across the cohorts.

Relative to Young and Middle borrowers, Older borrowers saw faster income growth between 2005 and 2008.[7] For all age groups, income falls from 2008 were generated by a combination of job losses, pay cuts and higher taxes.

Peak to trough income declines for all property-debt holding age groups however are similar over the 2008-2014 period, ranging from 15% to 17%. By 2014, none of the three cohorts had seen an income recovery to 2008 levels. Older borrowers' incomes were in fact still falling. This cohort has a lower likelihood of re-entering employment after the employment shocks in the 2008 crisis.[8]

Mortgage debt stocks

From 2005 to 2008, debt levels (dashed green lines in Figure 1) of Older borrowers remained relatively stable. Whereas debt accumulation rose roughly in line with income growth for Middle borrowers and outstripped income growth for Young borrowers. The latter were typically entering the mortgage market for the first time in the years leading up to 2008, whilst close to a fifth of Middle borrowers were

[6] Representing the 50th centile i.e. 50% of households have higher ratios and 50% of households have lower ratios.

[7] This is consistent with income growth profiles between 2003 and 2008, for example from the CSO's SILC data.

[8] Incomes may fall as borrowers reach retirement age, however of the almost 30% of borrowers in the Older cohort, almost 9 in 10 are still under 65 by 2014.

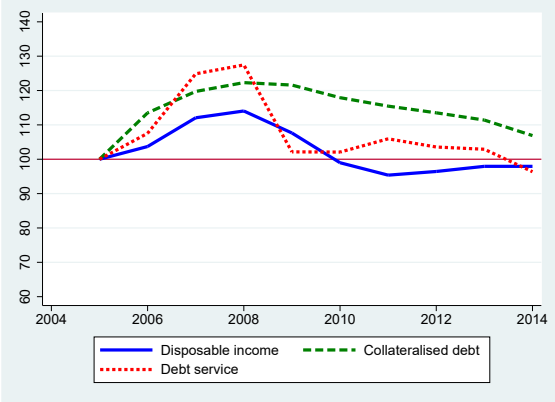
taking on additional property debt (including debt secured on their main residence, associated with trading up and/or equity release loans; as well as BTL property loans). Table 3 shows that over 10% of Middle borrowers have BTL mortgages, almost one fifth more than the incidence for Young and one third more than for Older borrowers. The share of BTL debt in total property debt is also increasing with age.

Across the age cohorts, declines in debt levels have been more variable than the income declines described above. Young borrowers have seen debt declines of one eighth; Middle borrowers a reduction of one fifth, and Older borrowers have managed reductions of over one third. The main reason for greater deleveraging by the Older group is their lower debt levels and shorter remaining mortgage maturities, such that, on their declining balance mortgages, for a given repayment, a larger share (75% in 2014) is going towards principal repayment than is the case for either of the Young (59%) or Middle (71%) cohorts (see Table 2).[9]

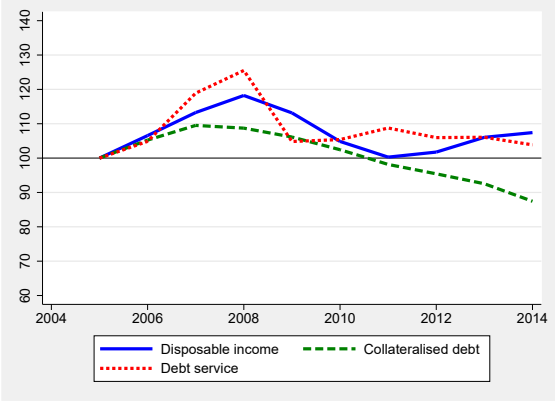
A relatively uniform post-2008 income shock,[10] along side differential debt accumulation and debt paydown, has seen the MDTI ratios of Young borrowers fall slowly (2% at the median) while Middle and Older cohorts saw more rapidly declining MDTI ratios over the time period (Table 2): 13% and 20%, respectively. This outcome partly reflects the mechanical relationship between age and amortisation, but also the size and lengthy maturities of loans taken out by borrowers during the housing boom and the forbearance available to stressed borrowers during the crisis.

Figure 1: Mortgage debt and disposable income indices, by cohort (median)

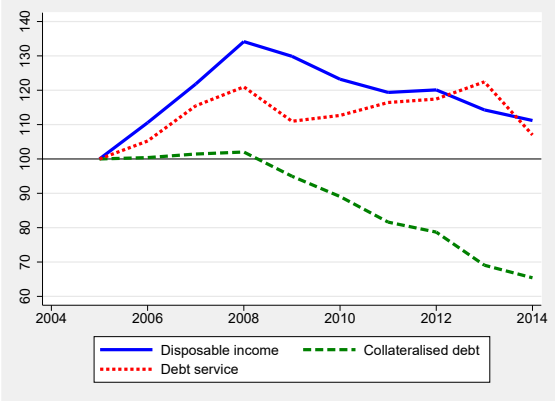
(a) Young Borrowers



(b) Middle Borrowers



(c) Older Borrowers



Source: HFCS-SIM, Lydon & McIndoe-Calder (2017).
Note: Figures conditional on having property debt. 2005=100

[9] Debt level changes are calculated using standard amortisation formulas. Whilst the HFCS data do not contain information of paying down mortgages ahead of the agreed terms the simulated series does track the QFA data well (Lydon & McIndoe-Calder 2017).

[10] Although the income trough was reached at different times and the recovery occurred at different rates across the age cohorts.

Almost 40% of outstanding HMR loans have an original mortgage maturity of at least 30 years, with 16% having a maturity of 35 years or more. Practically all mortgages with maturities of 30 or more years were contracted between 2003 and 2008.[11] Longer loan maturities mean that debt stocks decline more slowly than is the case for the same principle borrowed over a shorter period. Furthermore, interest only payments are also prevalent amongst Young and Middle borrowers (Kelly et al. 2014). Approximately 11% of mortgaged households in the Young and Middle cohorts reduced their contracted rates of amortisation by either moving to interest only arrangements or extending the length of their mortgage over this time period as a form of loan forbearance (Table 3).

Table 3: Mortgage characteristics in 2014, by birth year cohort

	Younger Borrowers	Middle Borrowers	Older Borrowers	Total
		Median		
Interest rate (%)	3.17	3.47	3.77	3.42
Remaining loan length (years)	22	12	6	16
LTV ratio (%)	87.12	47.17	20.62	64.95
		Share		
Negative equity (%)	39.38	15.71	7.29	26.64
Has BTL (%)	8.76	10.29	7.72	9.06
HMR mortgage modified 2007-2013 (%)	11.28	11.44	4.30	10.13
Currently outstanding payment 2013[1] (%)	7.33	14.24	10.06	9.91
Interest rate type				
Tracker (%)	39.20	29.47	20.01	32.93
SVR (%)	43.30	56.45	54.21	49.20
Fixed (%)	15.45	11.71	13.11	13.90
Other[2] (%)	2.05	2.37	12.67	3.96
Number of hhs	959	583	324	1866

Source: HFCS-SIM, Lydon & McIndoe-Calder (2017).

Note: Figures conditional on having HMR property debt and weighted using representative population weights.

[1] Stressed mortgage debt: defined using the HFCS data as currently having a missed mortgage payment.

[2] Includes endowment and life time mortgages (specific types of longer term, interest only products).

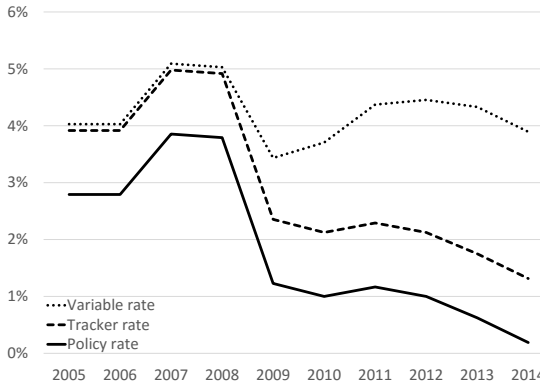
Mortgage debt repayments

Substantial differences are found between age cohorts when examining debt service level changes (dotted red lines Figure 1). Prior to 2008, Young and Middle borrowers saw their debt *service* levels rise more quickly than their outstanding stock of debt *or* income growth. This is partly explained by increases in interest rates over this time period (see Figure 2); as well as the relaxation of lending standards, specifically, increased loan to income ratios and loan duration at origination. For Older borrowers, debt service levels increased more

[11] See Lydon & O'Hanlon (2012) for a stark illustration of the increase in mortgage maturities during the credit boom.

slowly: below the rate of income growth.

Figure 2: Mortgage interest rates, by interest rate type



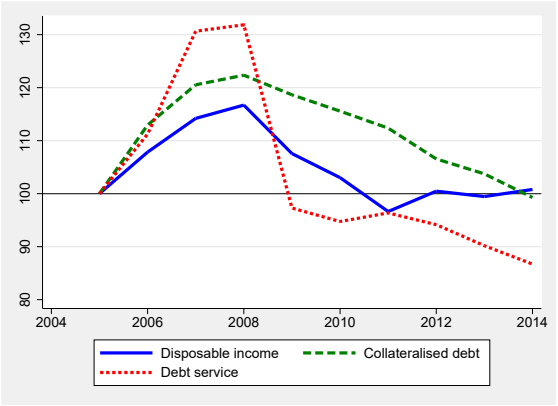
Source: HFCS-SIM, Lydon & McIndoe-Calder (2017)

After 2008, the debt service levels of Young borrowers declined more rapidly than their incomes. The initial drop between 2008 and 2009 was large, with a more gradual decline from 2009-2014. This decline (13% between 2008 and 2014) mitigated the impact of the income shock for this cohort. In contrast, Middle borrowers saw their debt service levels evolve roughly in line with changes in incomes between 2008 and 2014. Older borrowers, on the other hand, having seen only a small debt service reduction between 2008 and 2009 saw their debt service profiles rise (14% at the median) between 2009 and 2013 to a level higher than that in 2008.

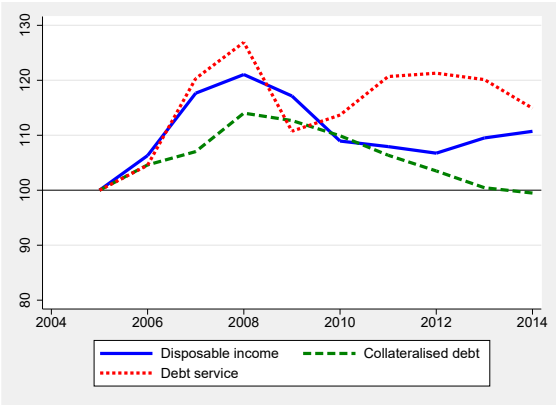
The evolution of debt service levels after 2008 was in large part due to interest rate changes, including the debt service increases seen for the Older cohort, forbearance measures notwithstanding. Over four fifths of households are on variable rate mortgages (Table 3), split between tracker loans (32.9%) – mortgages where the interest rate tracks the policy rate at a fixed premium – and other variable rate types (49.2%).[12] Interest rate pass-through is higher for tracker loans than for other variable rate types.[13] In many cases, this difference in interest rate pass through falls along age lines, reflecting the prevailing lending arrangements available at the time these households took out their mortgage.

Figure 3: Mortgage debt and disposable income indices, by mortgage type (median)

(a) Borrowers with a tracker mortgage



(b) Borrowers with an SVR mortgage



Source: HFCS-SIM, Lydon & McIndoe-Calder (2017).
Note: Figures conditional on having property debt. 2005=100

Young borrowers have the highest concentration of tracker loans, close to 40 per cent, with

[12] Fixed interest rate loans make up a less than 1 in 7 HMR mortgage loans and are evenly spread across the three cohorts.

[13] See Goggin et al. (2012) and Kelly et al. (2015) for a description of trends in variable mortgage interest rates from 2003-2014. The papers shows that non-tracker variable rates were identical to tracker mortgage rates up to 2009, after which lenders started to charge a higher margin on the former.

less than 20 per cent of Older borrowers holding these types of loans.

Figure 3 replicates the charts for income, debt level and debt service by mortgage interest rate type. Despite larger declines in disposable income between 2008 and 2014 (15% versus 10%), when compared to other variable rate borrowers, those with tracker loans benefited from significantly larger reductions in debt servicing.

In fact, despite the unprecedented drop in the policy rate since the onset of crisis, by the end of our simulation period (2014), repayments for SVR borrowers are not far below 2008 levels. Future interest rate increases will likely result in repayment increases for all variable rate borrowers, those on tracker rates are particularly vulnerable however, as they have relatively high outstanding debt levels and their incomes are recovering only slowly.[14]

3 Conclusion

This letter examines the disposable income, collateralised debt level and debt service profiles for Young, Middle and Older borrower cohorts. The outstanding debt positions of these groups relative to one another broadly reflect both the lending conditions prevailing at the time these borrowers entered the mortgage market for the first time and the relative position each cohort inhabits in the lifecycle. Young borrowers accumulated debt at a much faster pace than their disposable incomes grew leading up to 2008. The Young cohort borrowed to fund properties during a period of rapid house price appreciation and loosening lending standards. Middle borrowers accumulated debt largely in line with their income growth prior to 2008. They topped up their HMR mortgages and borrowed to fund BTL properties. Older borrowers' debt levels remained constant in the three years to 2008, their income growth outstripped their debt accumulation substantially. Older borrowers, having bought their properties well before this period appear to have stayed largely away from the frothy property market prior to 2008, although they did acquire some BTL loans.

Between 2008 and 2014 all groups have achieved at least some deleveraging, although the Young much more slowly than the Middle and Older cohorts.

The interaction of debt service level developments alongside income adjustments has allowed the median mortgage debt service repayment to income ratio of the Young and Middle cohorts to fall between 2008 and 2014, while the MDSR of the Older group has increased. Young borrowers have benefited from the large reduction in interest rates since 2008 due to the high share of tracker mortgages this group holds. However, this group is still highly leveraged, with a median mortgage debt repayment service to income ratio of over a fifth. Future interest rate increases are a real risk for these borrowers.

References

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[14] The low inflation environment since 2008 means that debt service obligations continue to constitute a substantial share of households' real net incomes. Even a moderate level of inflation, alongside constant real wages, over recent years would have seen debt obligations fall as a share of real incomes.

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Appendix

The data used in this letter comes from Lydon & McIndoe-Calder (2017). Taking the Irish 2013 Household Finance and Consumption Survey (HFCS) as a starting point, we draw on a range of administrative datasets and macro data to simulate household balance sheets at the micro level. The dataset spans 2005 to 2014 covering both the last few years of the credit boom and the long deleveraging that followed.

The general approach involves two steps: (1) Identify a suitable micro data source (which could include information in the HFCS itself) to age the variable of interest; (2) Verify and cross-check the imputed distributions using another data source. If no suitable micro data source exists for step (1), aggregate data is used, which is the approach most widely used in the literature (Krimmel et al. 2013).

Of interest to this letter is the simulation of mortgage debt (both HMR and BTL). Mortgage repayments and the stock of outstanding mortgage debt are rolled back using the standard amortisation formula. This is possible given the detailed information on mortgage loan characteristics in the HFCS data. Mortgage renegotiations and other changes to mortgage terms are controlled for. It is assumed that the interest rate type in 2013 holds historically and that the margin over the ECB policy rate is constant for tracker loans. Following Goggin et al. (2012) for non-tracker variable rate mortgages the margin over the ECB base rate is assumed the same up to 2009 and thereafter move towards the observed 2013 margin in a straight-line transition.

The back-bone of the income simulation is an administrative dataset on earnings from work, available from 2005 to 2014. The data, sourced from annual tax returns, contains information on weeks of work and annual earnings for each individual in the HFCS data. Private pensions paid by employers are also in this dataset. This allows individual level income shocks to be traced over time and is an important contribution to our understanding of household financial fragility during the recession.