Deleveraging in a highly indebted property market: Who does it and are there implications for household consumption?

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Norges Bank, Household Credit and Demand Risk Workshop, March 24th 2015

Background

- Prior to the financial crisis significant increase, across countries, in household debt
- Lead to considerable deleveraging since
  - Reduction in personal debt levels
- Mainly examined at an aggregate level
- A number of reasons why you might want to address this at a microeconomic, household level

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Deleveraging and the importance of household data

1. Household balance sheets as well as deleveraging inclinations
   - Likely to be quite heterogeneous
2. Important to understand who is deleveraging
   - Given distress in mortgage market
   - Implications for resolution strategies
3. Also implications of deleveraging
   - In particular for consumption
   - Any effect could act as a drag on growth
4. Micro, household data essential to control for wealth effects

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What we do

- Using micro level, household data
- Determine who is deleveraging in the Irish mortgage market and
- Assess the implications for consumption
- Irish market particularly affected by high debt levels
- Cussen, O'Leary and Smith (2012) estimate for a 24 country sample
  - Between 2005 and 2007 Irish household debt increased the most
- Housing market developments central to this
  - OECD: Irish house price growth between 1995 and 2007 the largest

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In case you want to go home early

- Our results suggest that:
- It is those households who can deleverage, who do
  - Older, more affluent households
  - Head of household who is employed or retired
  - Higher education levels
- Importantly, we find that
  - Controlling for housing wealth effects
  - Deleveraging has negative implications for changes in consumption
- We also find that
  - Households will reduce deleveraging if they expect a deterioration in future financial conditions
- Reinforces notion that deleveraging is related to affordability issues

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Why the build-up in leverage initially?

- Irish credit market liberalisation
- Arguably the most profound impact on credit provision
  - Domestically and internationally
- Deeper and more integrated bond markets (within the Eurozone)
  - Abolition of exchange rate risk
  - Substantial increase in market based funding - debt securities
- Irish institutions particularly availed of this funding
  - Celtic tiger growth in the real economy since the mid-1990s
  - Voracious demand for credit from Irish financial institutions

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Figure 1: Irish household liabilities: 2002 - 2013

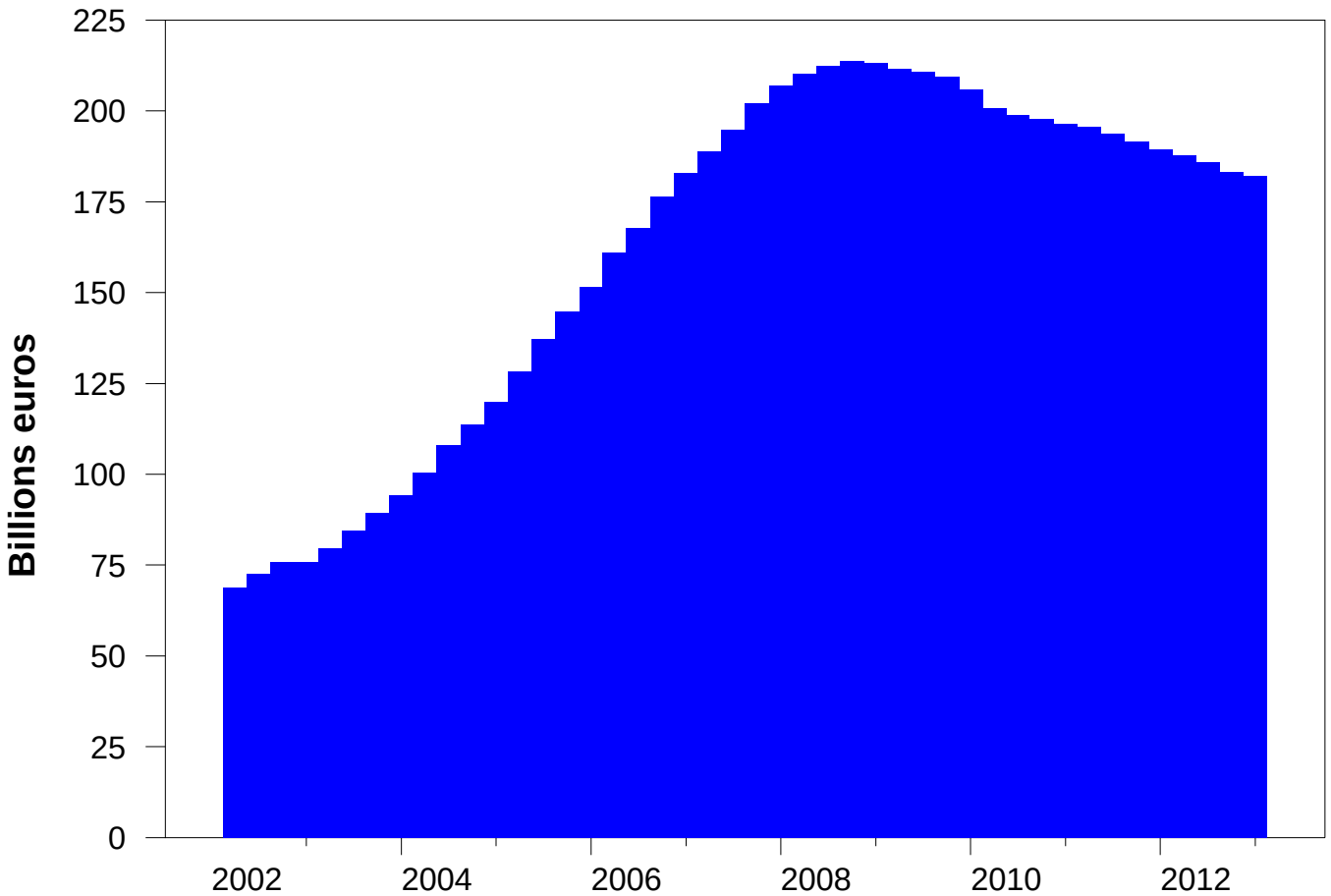


Figure 2: Irish household leverage ratios: 2002 - 2013

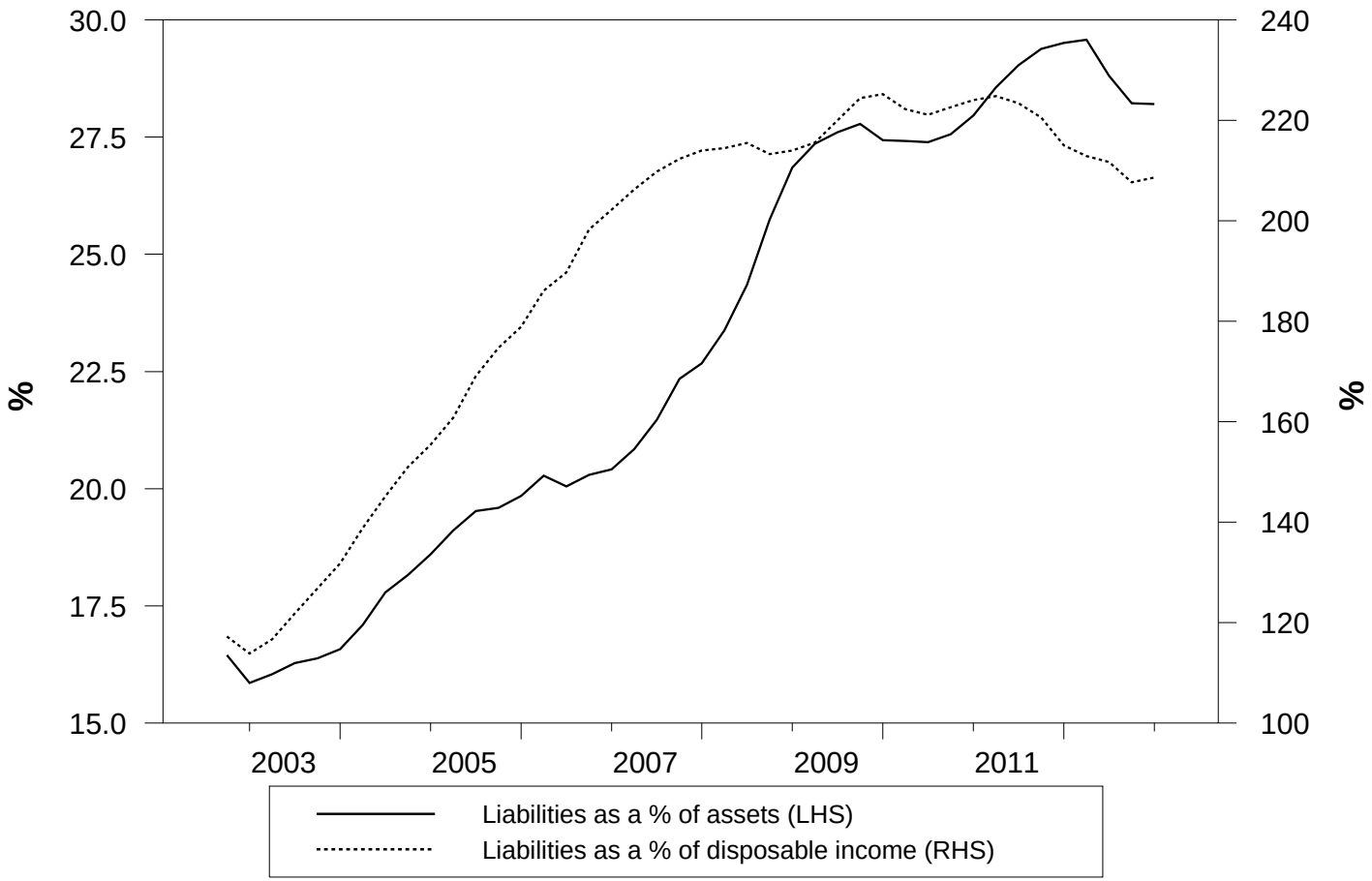
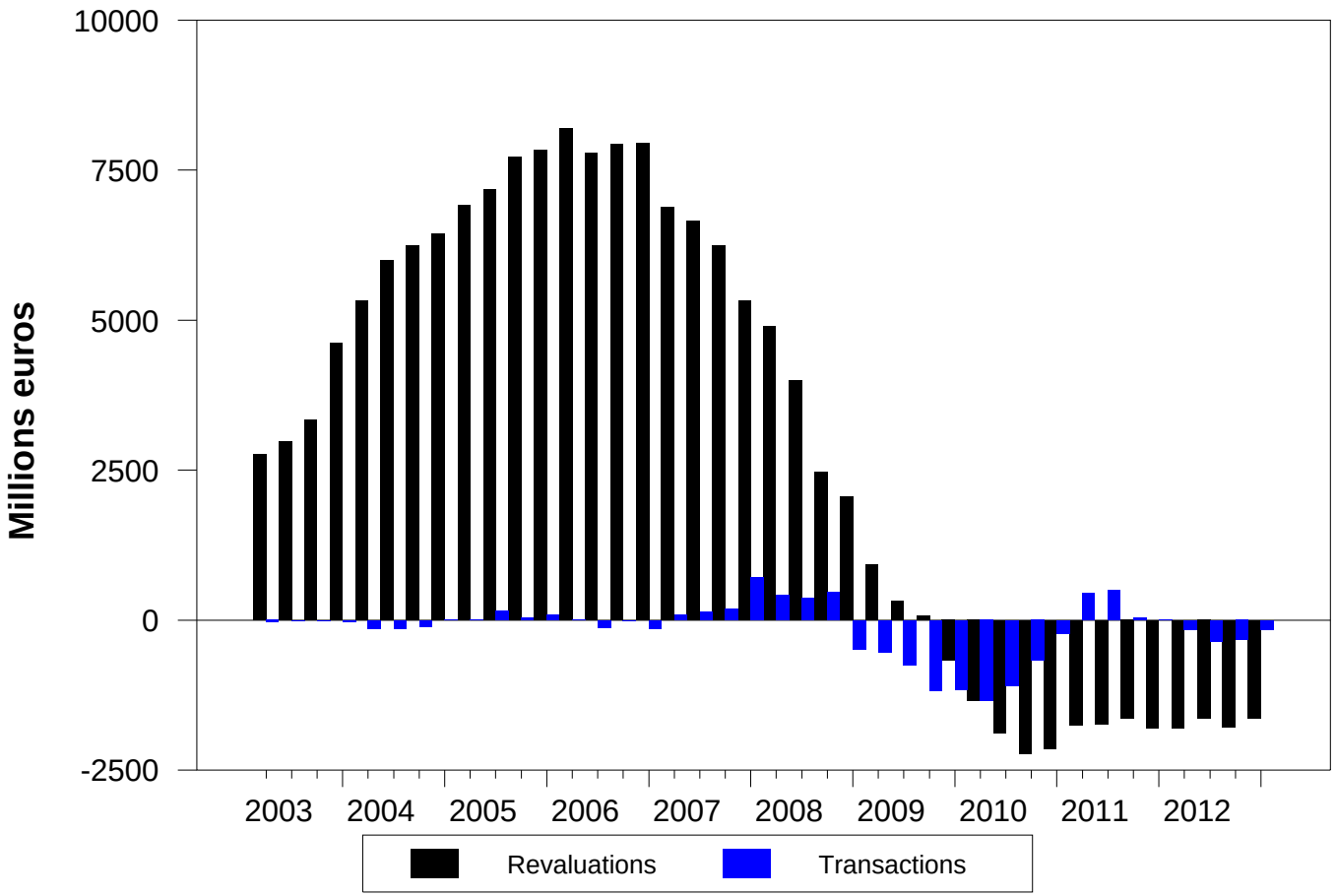


Figure 3: Quarter on quarter change in Irish household liabilities: 2002 - 2013



Background to the data sources

- Two related data sets used:
  1. Loan level data (LLD) collected for PCAR and
  2. Income survey of mortgaged households
- Loan level data:
  - Actual house prices and mortgage information
- Income survey:
  - Economic characteristics on 2,000 mortgaged households
  - Representative sample based on loan level data

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How we measure deleveraging

- Survey respondents asked if concerned about their debt
  - 55 per cent reported that they were concerned
- These respondents then asked about actions to deal with their concerns
  - 12 per cent making overpayments to clear their debt more quickly or using savings to supplement payments
- We generate a dummy variable “Deleverage”:
  - =1 if concerned and making overpayments/using savings
  - =0 if concerned and not making overpayments/using savings

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Who deleverages?

Model of Deleveraging

$$Prob(y_i = 1) = F(\beta(x_i)) + \epsilon i; i = 1, 2, ...n$$

- Where: x comprises a set of characteristics posited to influence deleveraging behaviour (including demographic, socio-economic and financial variables), β is a set of parameters to be estimated and ϵ_i is the error term

Table 1: Probability of deleveraging - baseline probit regression

Dependent variable: Deleverages	Marginal Effect	Std. Error
male	-0.012	0.023
married	-0.007	0.037
HH size	0.012	0.011
age − 3544	0.001	0.034
age − 4554	-0.009	0.037
age − 5564	0.079	0.062
age − 65+	-0.051	0.070
medium education	0.068	0.043
high education	0.082*	0.048
employed	0.071	0.037
retired/inactive	0.166**	0.104
hh income	0.053**	0.025
mrti	0.032	0.021
current ltv	-0.013	0.016
N	830	
LR chi^2	24.16	
Prob>chi^2	0.0438	
Pseudo R^2	0.0396	

Note: ***Significant at 1 per cent level; **Significant at 5 per cent level; *Significant at 10 per cent level.
Omitted categories for dummy variables are: age 18-35; low education and unemployed.

Table 2: Probability of deleveraging - including income quintiles

Dependent variable: Deleverages	Marginal Effect	Std. Error
male	-0.013	0.023
married	0.003	0.035
HH size	0.012	0.011
age − 3544	-0.002	0.034
age − 4554	-0.012	0.036
age − 5564	0.075	0.062
age − 65+	-0.054	0.067
medium education	0.074*	0.043
high education	0.087*	0.048
employed	0.078*	0.034
retired/inactive	0.169**	0.103
Income Quintile 2	0.040	0.042
Income Quintile 3	-0.017	0.035
Income Quintile 4	0.021	0.043
Income Quintile 5	**0.112****	**0.059**
mrti	0.021	0.020
current ltv	-0.009	0.016
N	830	
LR chi^2	29.61	
Prob>chi^2	0.0293	
Pseudo R^2	0.0485	

Note: ***Significant at 1 per cent level; **Significant at 5 per cent level; *Significant at 10 per cent level.
Omitted categories for dummy variables are: age 18-35; low education; unemployed; and income quintile 1 (lowest income group).

Table 3: Probability of deleveraging - including savings

Dependent variable: Deleverages	Marginal Effect	Std. Error
male	-0.011	0.023
married	-0.012	0.038
HH size	0.015	0.011
age − 3544	-0.000	0.034
age − 4554	-0.009	0.036
age − 5564	0.089	0.064
age − 65+	-0.051	0.070
medium education	0.058	0.043
high education	0.061*	0.043
employed	0.066	0.038
retired/inactive	0.156*	0.102
hh income	0.046*	0.025
mrti	0.032	0.021
current ltv	-0.012	0.016
savings	**0.042***	**0.026**
N	826	
LR chi^2	27.03	
Prob>chi^2	0.0285	
Pseudo R^2	0.0443	

Note: ***Significant at 1 per cent level; **Significant at 5 per cent level; *Significant at 10 per cent level.
Omitted categories for dummy variables are: age 18-35; low education and unemployed.

Mortgage Market Distress

Table 4: Probability of deleveraging - including negative equity

Dependent variable: Deleverages	Marginal Effect	Std. Error
male	-0.012	0.023
married	-0.011	0.037
HH size	0.014	0.011
age − 3544	-0.004	0.034
age − 4554	-0.016	0.036
age − 5564	0.082	0.064
age − 65+	-0.055	0.067
medium education	0.061	0.043
high education	0.073*	0.048
employed	0.066	0.038
retired/inactive	0.155*	0.102
hh income	0.046*	0.025
mrti	0.032	0.021
current ltv	-0.001	0.020
savings	0.042*	0.026
negative equity	**-0.028**	**0.030**
N	826	
LR chi^2	27.91	
Prob>chi^2	0.0324	
Pseudo R^2	0.0458	

Note: ***Significant at 1 per cent level; **Significant at 5 per cent level; *Significant at 10 per cent level.
Omitted categories for dummy variables are: age 18-35; low education and unemployed.

Table 5: Probability of deleveraging - including credit constraints

Dependent variable: Deleverages	Marginal Effect	Std. Error
male	-0.011	0.023
married	-0.013	0.038
HH size	0.014	0.011
age − 3544	0.000	0.034
age − 4554	-0.008	0.036
age − 5564	0.089	0.065
age − 65+	-0.051	0.070
medium education	0.061	0.043
high education	0.073	0.048
employed	0.065	0.038
retired/inactive	0.156*	0.102
hh income	0.047*	0.025
mrti	0.032	0.021
current ltv	-0.012	0.016
savings	0.045*	0.026
credit constrained	**0.015**	**0.029**
N	826	
LR chi^2	27.33	
Prob>chi^2	0.0380	
Pseudo R^2	0.0448	

Note: ***Significant at 1 per cent level; **Significant at 5 per cent level; *Significant at 10 per cent level. Omitted categories for dummy variables are: age 18-35; low education and unemployed.

Expectations

Table 6: Probability of deleveraging - incorporating financial expectations

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retired/inactive	0.155*	0.103
hh income	0.047*	0.026
mrti	0.026	0.019
current ltv	-0.011	0.017
savings	0.042*	0.026
expect deterioration	**-0.039***	**0.023**
N	797	
LR chi^2	28.36	
Prob>chi^2	0.0287	
Pseudo R^2	0.0471	

Note: ***Significant at 1 per cent level; **Significant at 5 per cent level; *Significant at 10 per cent level. Omitted categories for dummy variables are: age 18-35; low education and unemployed.

Implications for Consumption?

Deleveraging and Consumption

- Implications of a financial shock
  - Typically assessed through a wealth effect channel
  - An endogenous reduction in debt
  - Less spending leads to less borrowing and
  - A reduction in debt levels
- But, do households respond to the *level* of debt itself?
  - They may target a certain leverage rate
  - Respond when debt levels are in excess of this
- Also, financial institutions reluctant to lend to indebted households
  - Another reason why households care about the level of their debt
- Quite an important issue
  - As standard models of consumption
  - Typically do not include debt levels

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Information on Consumption

- Survey respondents asked how consumption has changed over the previous year
  - Increase / Decrease / No Change
- These respondents then asked about Euro amount of change
- We generate a continuous dependent variable and use OLS regression to assess impact of controls on consumption change
  - include same binary controls as before
  - but changes in independent continuous variables
- Importantly, we control for housing wealth

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Table 7: Implications for consumption - OLS regression results

Dependent variable: Euro change in consumption	Coefficient	Std. Error
constant	-321.124***	128.778
male	1.155	28.252
married	23.986	41.948
HH size	22.856*	13.101
age − 3544	-7.767	40.855
age − 4554	-24.598	42.978
age − 5564	43.854	53.396
age − 65+	-126.671	101.278
medium education	86.378**	41.431
high education	74.391*	42.957
employed	57.406	47.702
retired/inactive	61.616	64.939
change in hp	-8.584	7.280
income : no change	76.255**	38.410
income : increase	88.537	60.065
deleverage	**-78.761****	**40.491**
N	902	
F (15,886)	1.72	
Prob>F	0.0417	
R^2	0.0283	

Note: ***Significant at 1 per cent level; **Significant at 5 per cent level; *Significant at 10 per cent level.

Concluding comments

- It is those households who can deleverage, who do. Expectations play a role
  - Implications? Less well-off segments of the mortgaged population are likely to remain significantly indebted for quite some time
  - Of interest in the context of possible debt resolution strategies
- Importantly, we find that, controlling for housing wealth effects, deleveraging has negative implications for changes in consumption
  - As household income levels begin to recover, the knock on implications for consumer demand may not be as significant as would be expected
- More generally, the importance of debt levels for consumption behaviour illustrates an important linkage between financial sector developments and the real economy

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  - Of interest in the context of possible debt resolution strategies
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  - As household income levels begin to recover, the knock on implications for consumer demand may not be as significant as would be expected
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Concluding comments

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Thank you