

Household debt and consumption in the UK

Evidence from UK microdata

10 March 2015

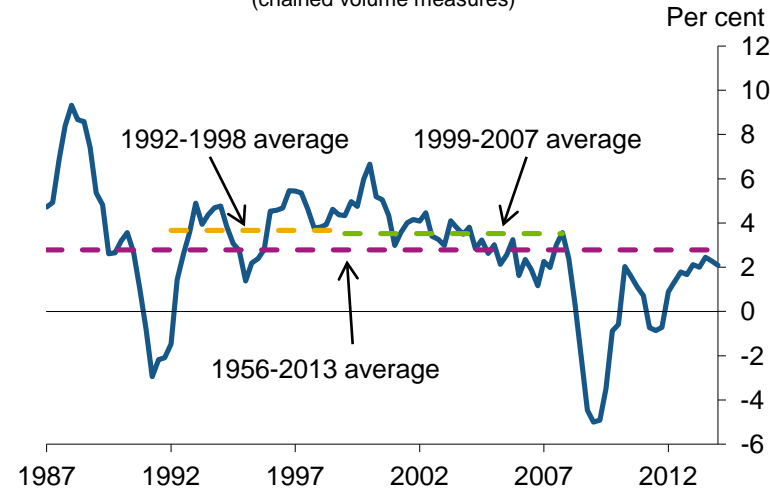
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Motivation

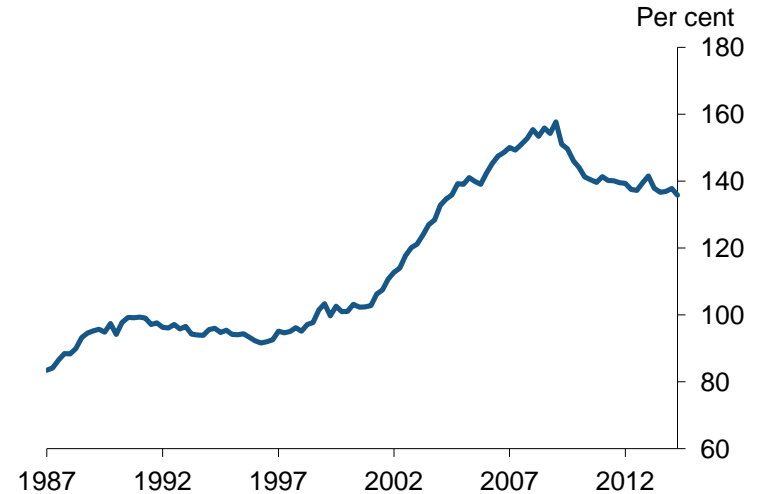
Household consumption

(chained volume measures)



Sources: ONS and authors calculations.

Mortgage debt to income ratio



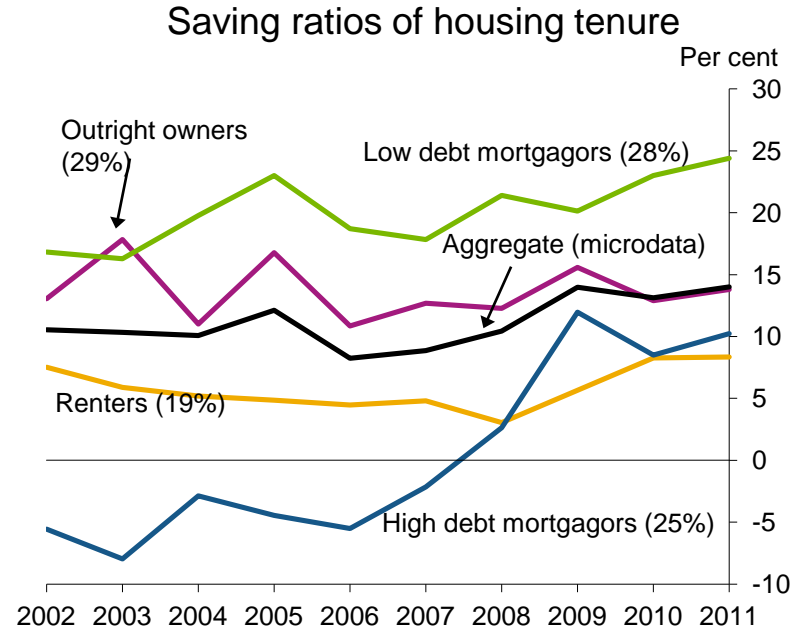
Sources: ONS and Bank calculations.

Total financial liabilities as a percentage of annualised total households resources.

- The financial crisis characterised by a collapse in spending
- Large build up of household debt to income ratio before the crisis
- One hypothesis is that high pre-crisis debt levels dragged on post-crisis consumption growth

Motivation

- Large degree of heterogeneity masked in aggregate data
- Household assets and debts are not evenly distributed
- Highly leveraged households (HLH) increased their savings the most



Sources: Living Costs and Food (LCF) survey and Bank calculations.

Saving ratios calculated using the average consumption and disposable income levels for each group of households.

High debt mortgagors have outstanding mortgage debt of more than twice their annual disposable income. All other mortgagors are low debt.

Purpose of the research

- Examine whether households who had high levels of pre-crisis leverage reduced their consumption by more than others after the crisis.

Outline for the talk

- Mechanism of how HLH may affect consumption
- Literature review
- Data and descriptive statistics
- Regression results
 - Pseudo panel estimation
 - Household level estimation
- Some explanations on why HLH might be reducing consumption
- Future extensions
- Conclusion

House prices and consumption

- In UK house price inflation and consumption growth are correlated
 - Wealth channel (e.g. Campbell & Cocco (2007))
 - Increasing income expectations can lead to rising house prices when supply is fixed (e.g. King (1990), Attanasio, Blow, Hamilton & Leicester (2009), Attanasio & Weber (1994))
- For borrowers, house prices are closely tied to mortgage debt
 - Non-homeowners might reduce their current consumption to get on housing ladder
 - But if credit conditions are loose, they can instead choose to take on more debt subject to credit availability
 - Housing can be used as collateral: i.e. can borrow against your house for consumption

How would debt affect spending?

- In a simple life-cycle framework, households borrow and save to smooth their consumption
- But assumptions of the simple model may not hold
 - Lifetime income is uncertain
 - Borrowing constraints can change over time
 - Assets and debts are unequally distributed (e.g. younger vs. older households)
- Some models do find a role for debt in affecting spending by allowing changes in income expectations or credit conditions to interact with debt (Fisher 1993, King 1994, Eggertson and Krugman 2012)

Mechanism – How would debt affect spending?

- Commitment contract
- Unrealistic income expectations
- Financial accelerator
- Credit constraints

Why this matters for policy

- May pose risk to banking system resilience if, say, interest rates were to increase
- Pose a risk to real economy if have to make sharp cuts to consumption

Literature Review

- Mian, Rao & Sufi (2013)
 - Look at the impact of having pre-crisis debt on changes in consumption using housing supply elasticity (Saiz 2010) as an instrument
 - Find that household debt and falling house prices explain most of the prolonged weakness in consumption post-crisis
- Dynan (2012)
 - Finds that highly leveraged mortgagors had larger declines in spending between 2007-2009, relative to other homeowners
 - Argues that rise in leverage left many households in need of balance sheet repair

Contribution

- Study the impact of highly indebted households on consumption spending in the UK, post the Great Recession
- UK housing market is different to the US

Data

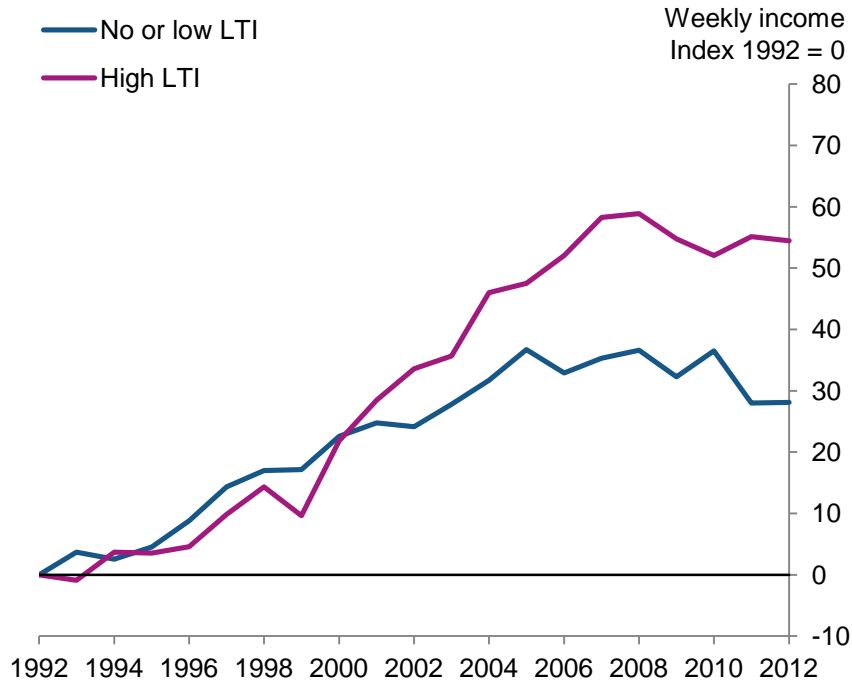
- Family Expenditures Survey (FES)
- 1992 – 2012, annual with quarterly identifiers; 5,000 per year
- Non-housing consumption
- Total household disposable income net of mortgage interest
- Scaled to match National Accounts and deflated
- Highly indebted mortgagors are those with a $D/Y = 2$
- House prices from ONS

Descriptive Stats (in 2007)

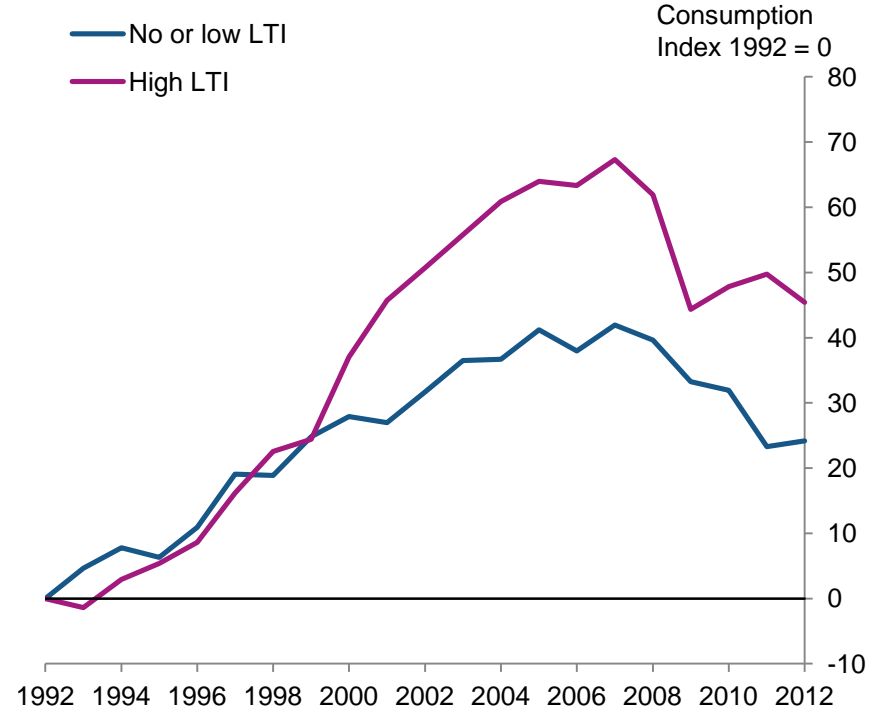
Variable	Whole sample		With debt		With high debt		Min	Max
	Obs.	Mean	Obs.	Mean	Obs.	Mean		
Weekly household income	4898	551	2294	687	1164	640	0	1286
Net Expenditure	4898	397	2294	480	1164	465	30	1417
Outstanding level of mortgage debt	4898	36,582	2294	81,102	1164	119,694	8	966,000
Loan to Income (LTI) Ratio	4898	1.09	2260	2.36	1130	4	0	10.80
Has a mortgage	4898	0.46	2294	1.00	1164	1.00	0	1
Married dummy	4898	0.53	2294	0.63	1164	0.56	0	1
Household size	4898	2.57	2294	2.88	1164	2.82	1	9
School leaving age	4872	17.52	2294	17.96	1164	18.36	10	57
Age	4898	47	2294	44	1164	40	21	69

Non-housing expenditure and Income

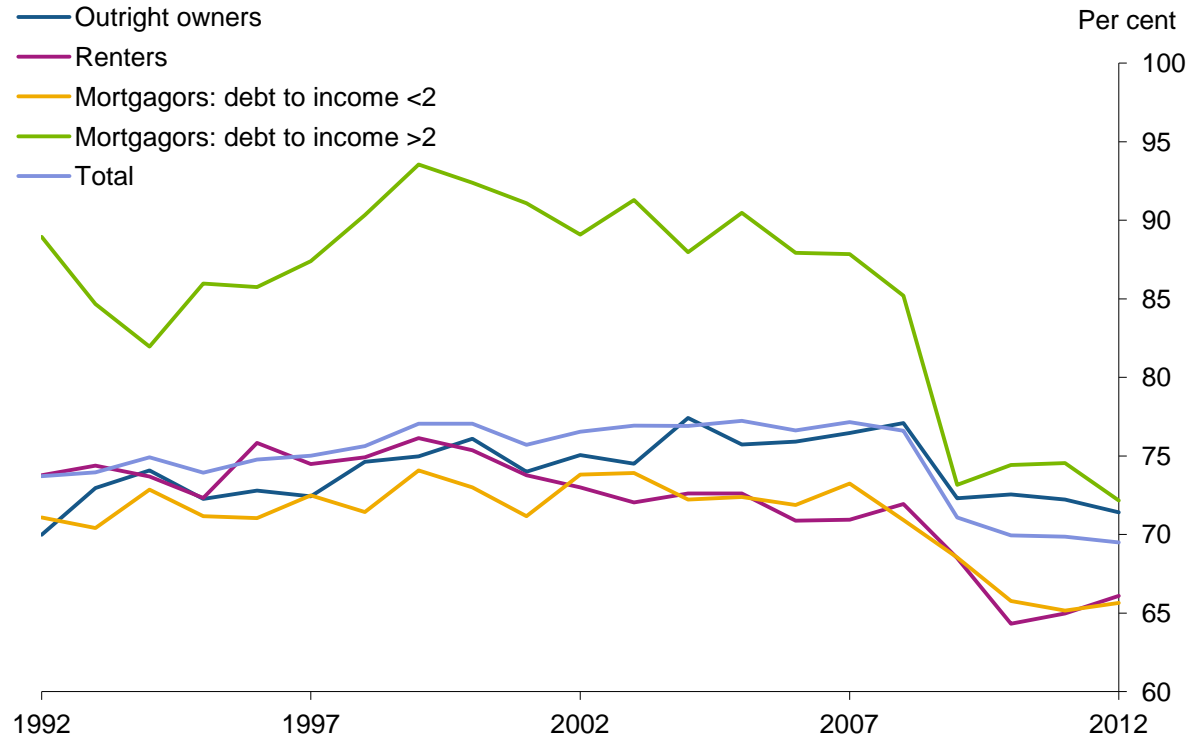
Income



Expenditure



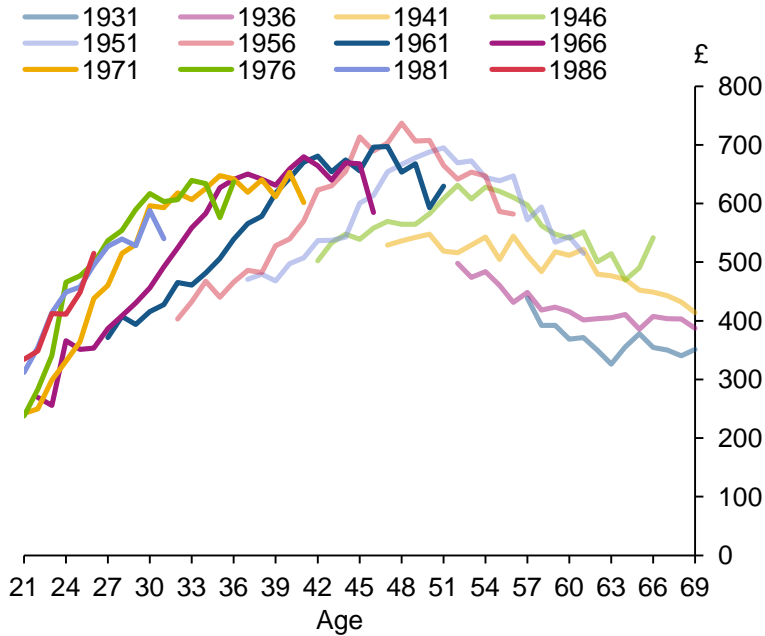
Non-housing consumption as a share of income



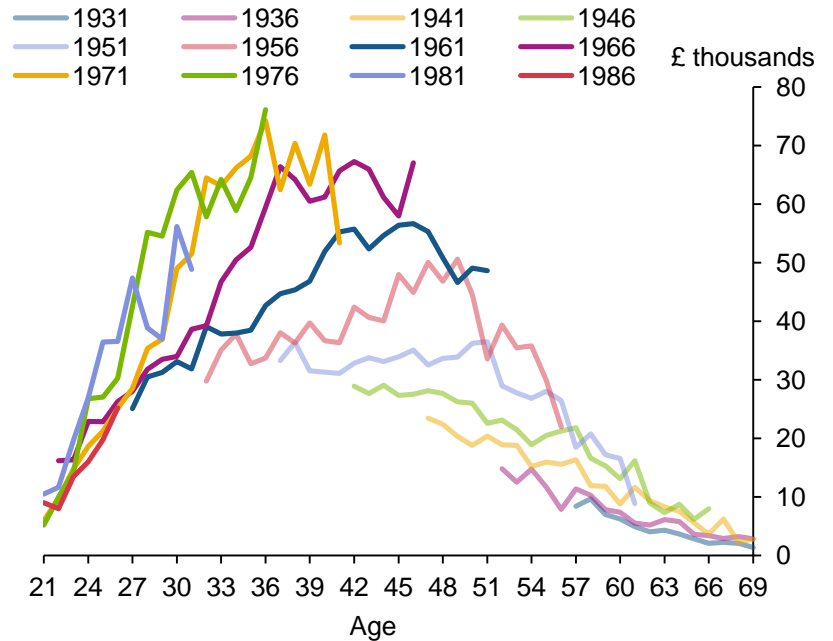
Sources: Living Costs and Food (LCF) Survey, ONS and authors calculations.

Lifecycle profiles of different cohorts

Weekly income



Mortgage debt



Identification issues

- No panel element
 - Quasi-panel (Deaton 1985):
 - Single birth cohort, with pooled years (change relative to pre-crisis)
 - 5 year birth cohort, by year and mortgage tenure (change relative to pre-crisis)
 - 10 year birth cohort by quarter and mortgage tenure (first differences)
 - Endogeneity of cohorts (selection into mortgagor status)
- Missing house price and wealth/asset information
 - Exogeneity assumption of the leverage ratio (income and regional house price controls)
- Cannot infer causality

10 year birth cohorts by mortgage group

- Panel similar to Campbell & Cocco (2007)
- 10-year date of birth cohorts (1931, 1941, ..., 1981)
- Aged between 21 - 69
- Quarterly data from 1996 – 2012
- Advantage: Longer time series

$$\Delta c_{it} = \beta_1 \Delta y_{it} + \beta_2 (D/Y)_{it-1} + \beta_3 \text{postcrisis} + \beta_4 (D/Y)_{it-1} \text{postcrisis} + \beta_5' X_{it} + \alpha_i + \text{quarter}_t + e_{it}$$

Dependent variable: $\Delta \ln(\text{non-housing consumption})$

VARIABLES	(1) Baseline	(2) Recession/Post crisis	(3) Young	(4) Old	(5) Lag Y	(6) Euler Eq.
$\Delta \ln$ Income	0.664*** [0.06]	0.661*** [0.06]	0.735*** [0.08]	0.589*** [0.06]		
Lag $\Delta \ln(\text{Income})$					-0.339*** [0.05]	
Lag $\Delta \ln$ (Consumption)						-0.545*** [0.03]
Lag D/Y *postcrisis	-0.008* [0.00]					
Lag D/Y * 2008-9		-0.015*** [0.00]	-0.020* [0.01]	-0.019 [0.01]	-0.041*** [0.01]	-0.041** [0.01]
Lag $\ln(D/Y)$ * 2010-12		-0.014 [0.02]	-0.028* [0.01]	0.009 [0.02]	-0.064** [0.03]	-0.076** [0.03]
Constant	-0.572* [0.27]	-0.827*** [0.23]	-0.945 [0.55]	-1.355** [0.50]	-0.833*** [0.25]	-0.648** [0.21]
Postcrisis dummy	YES	NO	NO	NO	NO	NO
2008-9 & 2010-12 dummies	NO	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES	YES
Observations	536	536	196	340	536	536
R-squared	0.566	0.568	0.575	0.588	0.421	0.570
Number of id	11	11	6	8	11	11

Robust standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

Why did debt impact younger households consumption more?

- More likely to face tighter credit constraints – no credit history
- Less wealth
- More volatile income

Additional work

- Get a better handle on coefficient size
- Quantify macroeconomic effect
- Deal with endogeneity
 - Use the Wealth and Assets survey for asset information
 - Shocks to income (excess sensitivity & amplification effects)
 - Explore getting more granular FES data (e.g. VML)
- Include volatility in regressions
- Explore ARM effect and pass through
- Consumption response to debt before the crisis

Conclusions

- There is a correlation between high levels of pre-crisis debt and the subsequent weakness in consumption during and post the Great Recession in the UK
- Suggests that effect appears to be persistent
- Young might have cut consumption by more than others
- Further works needs to be done