Household debt and spending in the United Kingdom

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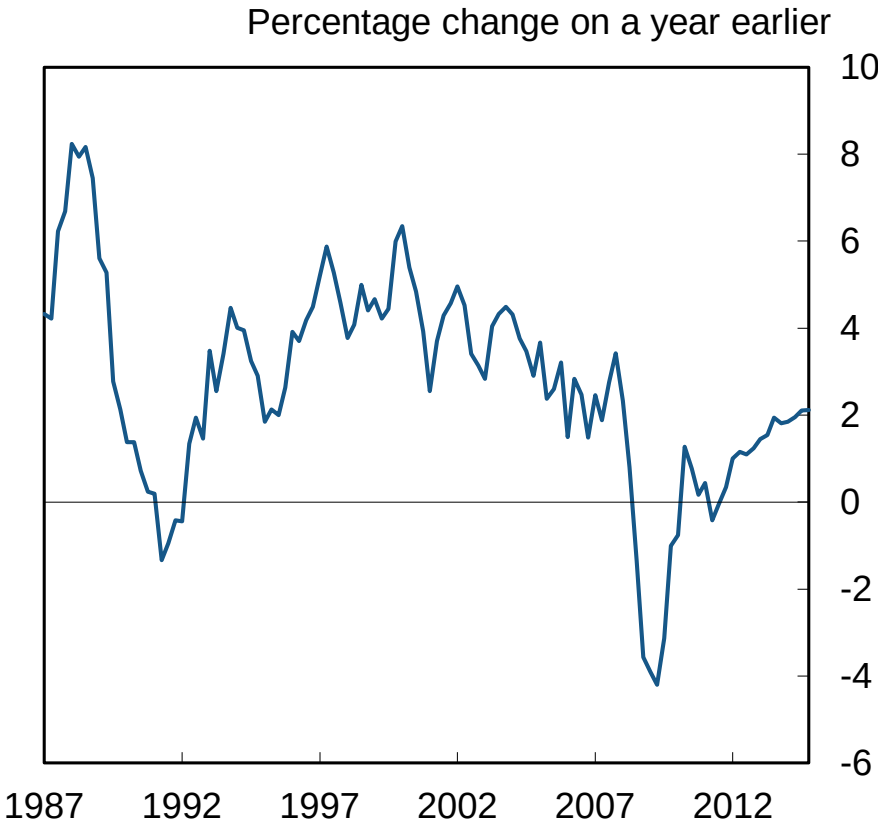
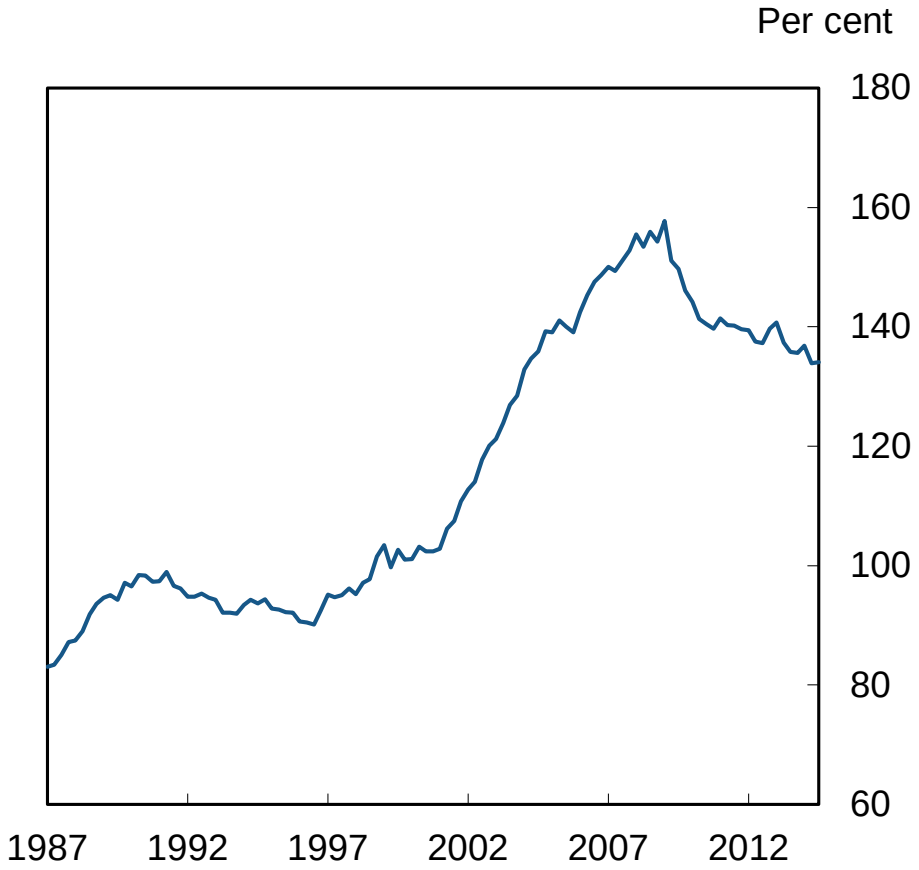
Outline

- Motivation
- Literature/theory
- Data/methodology
- Econometric results
- Aggregate implications
- Survey evidence on reasons for different spending responses
- Conclusion/policy implications

Consumption growth



Household debt to income



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Motivation

- There was a large build up of household debt in the UK before the financial crisis
- Did households who had high levels of pre-crisis debt reduce their consumption by more than others after the crisis?
- And did debt provide any support to spending before 2007?

Why this matters for policy

- Want to understand the reasons for weakness in household spending during the financial crisis
- More generally, it is important to understand implications of higher levels of indebtedness
- Greater risk of households suffering financial distress following shocks to income or interest rates may pose direct risks to banking system
- Larger spending cuts could have knock on effects for rest of the economy
  - Financial distress could increase further
  - Affects monetary policy decisions

Should debt affect household spending?

- In a simple life-cycle model, households borrow or save to smooth their consumption and debt has no effect on spending decisions
- But assumptions of the simple model may not hold
  - Households' ability to borrow may change
  - Households are not certain about their lifetime incomes
- Some models do find a role for debt in affecting spending by allowing changes in income expectations or credit conditions to interact with debt (King (1994), Eggertson and Krugman (2012))

Literature

- Mian, Rao & Sufi (2013)
  - Decline in consumption was greater in regions of the US that had higher debt prior to the crisis

- Dynan (2012)
  - Highly leveraged US mortgagors had larger declines in spending between 2007-2009

- Andersen, Duus and Jensen (2014)
  - Negative correlation between pre-crisis LTV and change in consumption during crisis in Denmark

Research design

- Ideally would use household panel data to look at changes in consumption over the crisis period by debt level

- But there is no panel in the UK with good consumption and balance sheet data, only repeated cross-section

- Follow 2 different approaches:
  1. Create a pseudo panel (Deaton (1985)) to look at changes in consumption for cohorts
  2. Look at how level of consumption varies by debt level in cross-sectional data and how that changes over time

- Neither approach proves causality

Pseudo panel vs cross section analysis

- Pseudo panel:
  - Shows how consumption changed for different groups
  - Small number of observations
  - Trade off between number of cohorts and reliability of consumption estimate for each cohort
  - Less variation in debt

- Cross section:
  - Can only compare difference in level of consumption for households with similar characteristics at different points, not how it changed for an individual household
  - Larger sample size
  - More variation in debt

Data

- Living Costs and Food Survey
- Repeated cross section of UK households
- 5,300 households per year
- Focus only on households where head is aged 21-69
- Use non-housing consumption
- Secured debt data: level of outstanding mortgage debt
- 1992 – 2012
- Measure income net of mortgage interest payments

Pseudo panel research design

- We estimate the following equation:

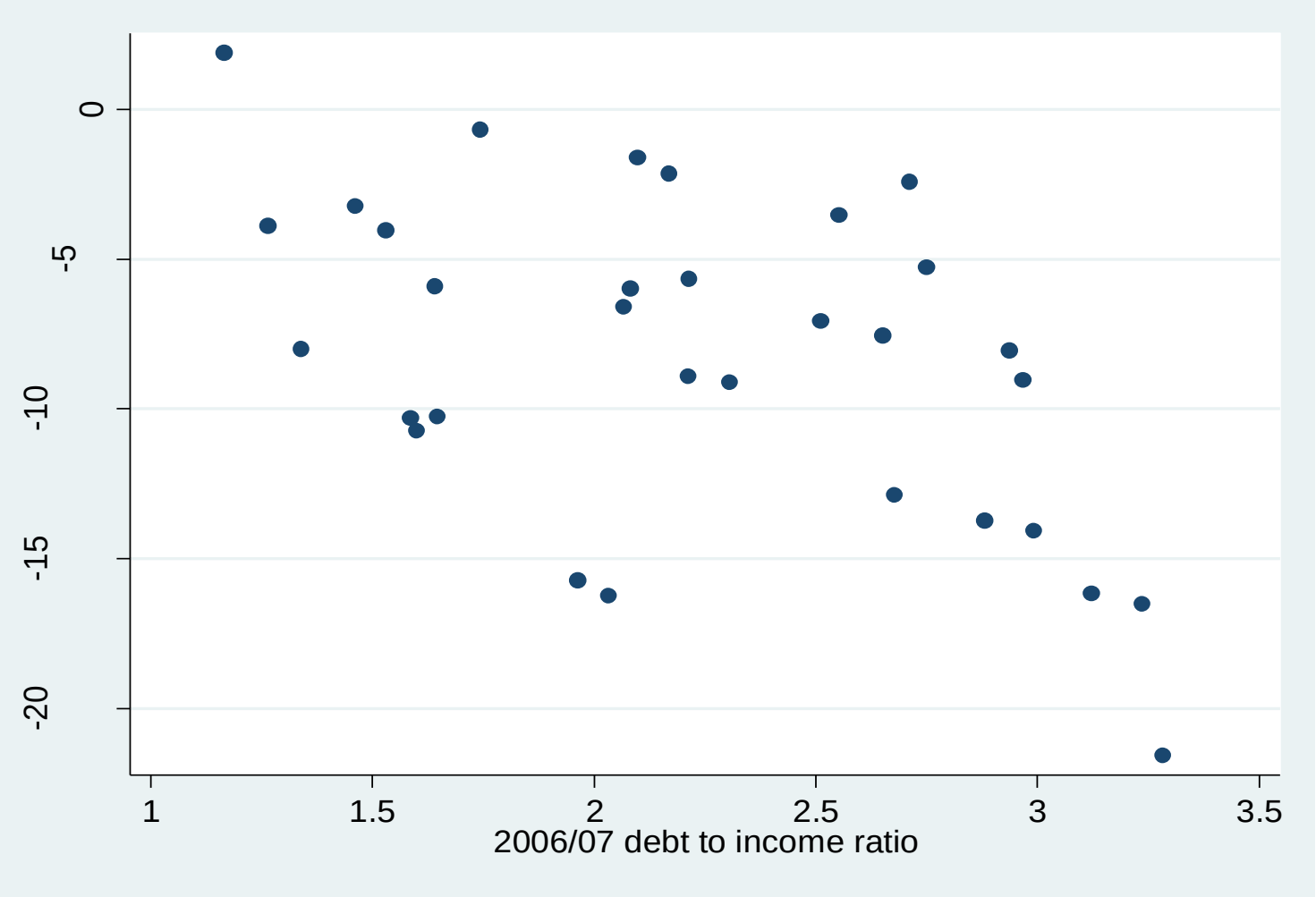
$$\Delta C_{it} = \beta_1 (D_{it-1} / Y_{it-1}) + \beta_2 \Delta Y_{it} + \beta_3^{'} X_{it} + e_{it}$$

- Assess sensitivity to different cohort definitions:
  - Single birth years
  - Single birth years by mortgagor/non-mortgagor status
  - 5 birth years by mortgagor/non-mortgagor status

- Pool 2006/07 and pre-crisis period and 2009/10 as post-crisis

- Minimum cell size of 50 (averages of 217, 103 and 523)

Change in consumption relative to income (single birth year mortgagor cohorts)



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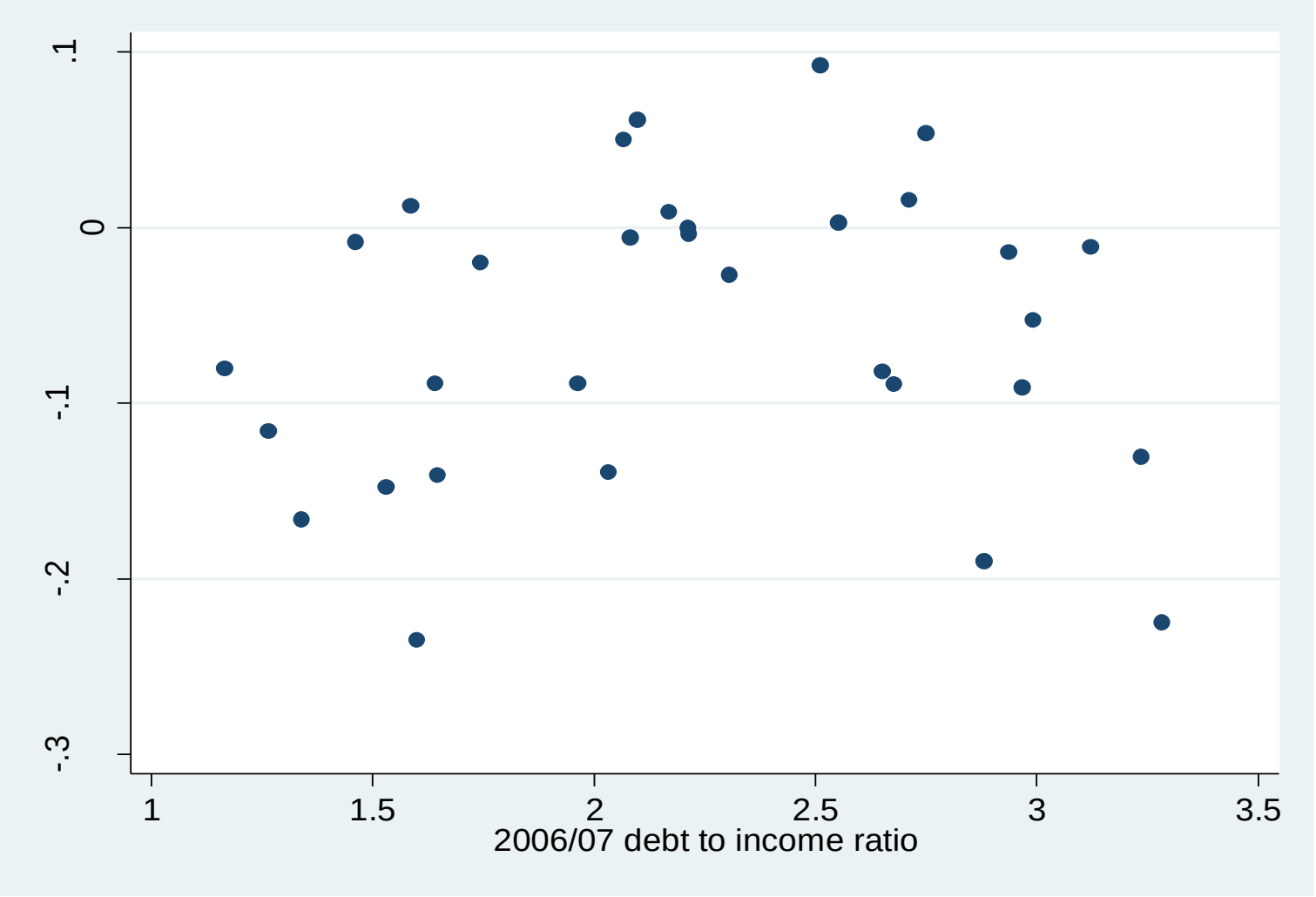
Change in consumption (single birth year mortgagor cohorts)



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Pseudo panel regression results 1

Dependent variable: ∆ln(non-housing consumption 06/07 to 09/10)

Cohort definition	(1) Single birth year	(2) Single birth year, mortgagor/non-mortgagor	(3) 5 birth year, mortgagor/non-mortgagor
∆ln(Income net of mortgage interest)	0.698*** (5.96)	0.640*** (5.50)	0.819*** (6.45)
06/07 mortgage debt to income ratio	**-0.030**** **(-2.31)**	**-0.033***** **(-4.37)**	**-0.031***** **(-3.06)**
Observations	45	77	19

Robust t-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1

All regressions also include change in number of adults, change in number of children and a constant

Pseudo panel regression results 2

Changes 2006/07 to 2009/10. Single birth year, mortgagor/non-mortgagor cohorts.

Dependent variable	(1) Δln(Non-housing consumption)	(2) Δln(Non-housing consumption)	(3) Δln(Durables)	(4) Δln(Non-durables)
Δln(Income net of mortgage interest)	0.640***		0.954***	0.513***
	(5.50)		(5.07)	(3.19)
Δln(Income before mortgage interest)		0.653***		
		(5.51)		
06/07 mortgage debt to income ratio	**-0.033*** **	**-0.021*** **	**-0.051*** **	**-0.021* **
	(-4.37)	**(-2.79)**	**(-3.92)**	**(-1.80)**
Observations	77	77	77	77

Robust t-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1

All regressions also include change in number of adults, change in number of children and a constant

Pseudo panel regression results 3

Dependent variable: ∆ln(non-housing consumption)

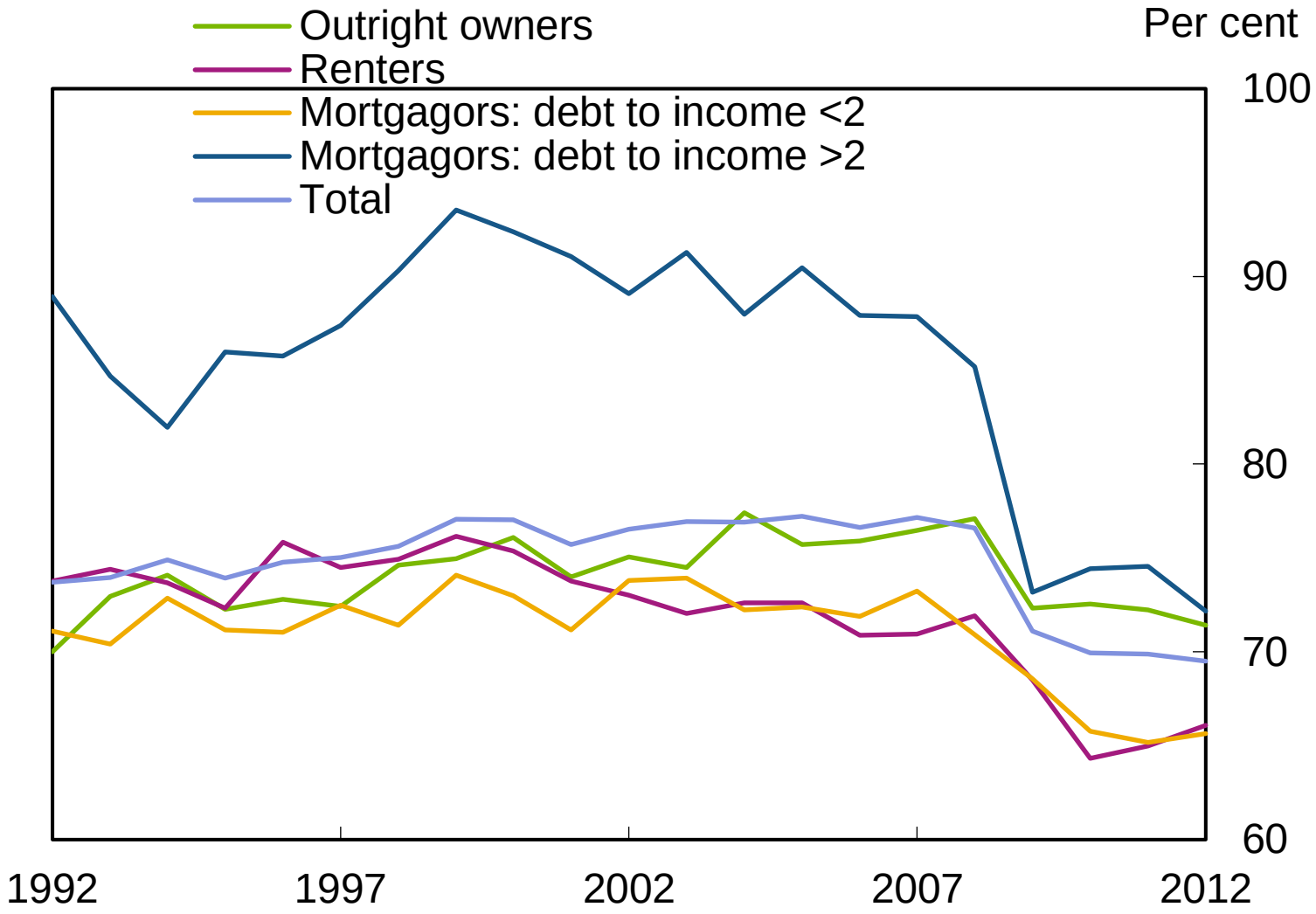
Single birth year, mortgagor/non-mortgagor cohorts

Time period	(1) 06/07 to 09/10	(2) 06/07 to 11/12	(3) 00/01 to 03/04	(4) 03/04 to 06/07
∆ln(Income net of mortgage interest)	0.640*** (5.50)	0.644*** (6.53)	0.531*** (9.05)	0.573*** (5.37)
Mortgage debt to income ratio at start of period	**-0.033***** **(-4.37)**	**-0.030***** **(-4.53)**	**0.009** **(1.07)**	**0.006** **(0.72)**
Observations	77	73	78	78

Robust t-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1

All regressions also include change in number of adults, change in number of children and a constant

Consumption relative to income



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Cross-sectional analysis research design

- We estimate the following equation:

$$C_{it} = \beta_1 (D_{it} / Y_{it}) + \beta_2' (D_{it} / Y_{it}) * year_t + \beta_3' year_t + \beta_4' cohort_i + \beta_5' X_{it} + e_{it}$$

vector

- Allow coefficient on debt to income to vary by year, relative to 2007
- Estimate from 1992-2012
- Include controls for income, birth cohort, age, household composition, education, employment status, region and house prices

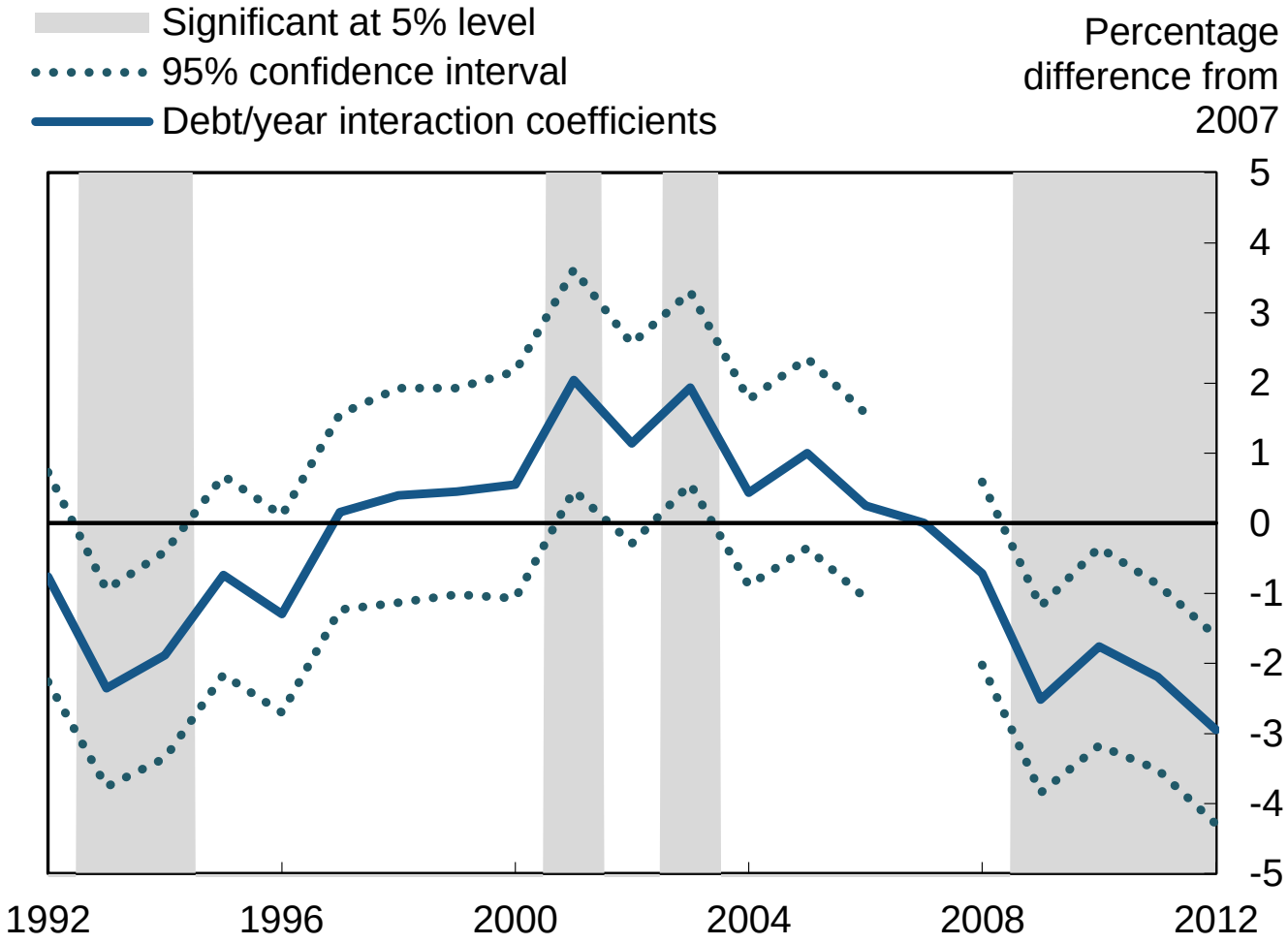
Cross sectional regression results

Dependent variable: ln(non-housing consumption)	(1)	
Mortgage debt to income ratio year interactions (reference year 2007):		
2008	-0.007	(-1.07)
2009	-0.025***	(-3.71)
2010	-0.018**	(-2.44)
2011	-0.022***	(-3.25)
2012	-0.030***	(-4.32)

Robust t-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Cross sectional regression results

Impact of a 1 unit increase in debt to income ratio on consumption, relative to 2007



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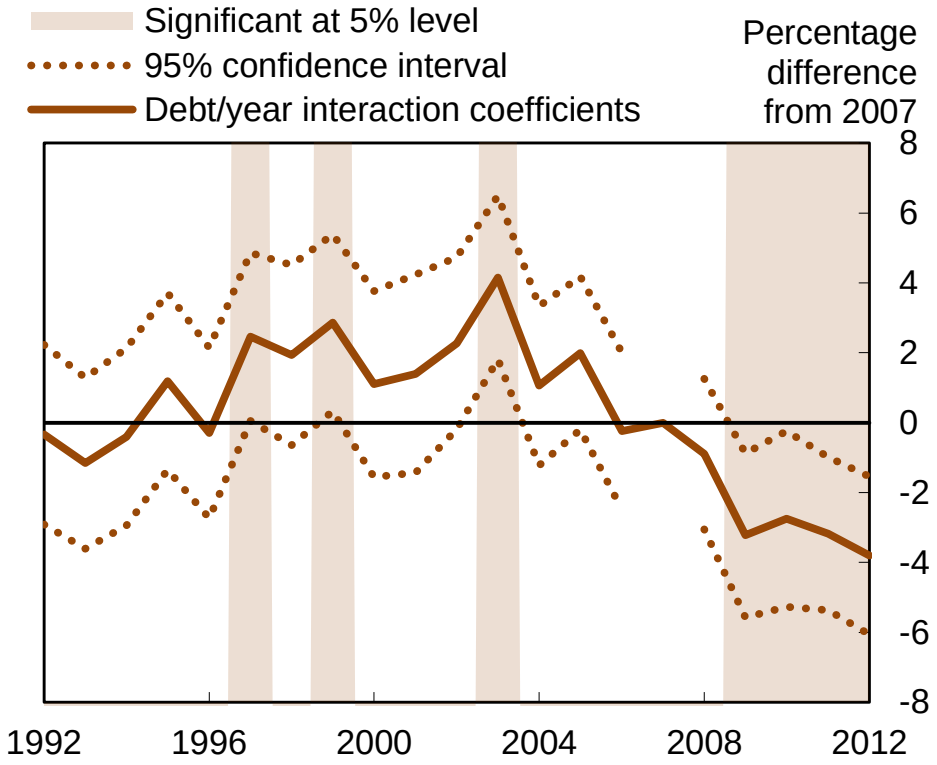
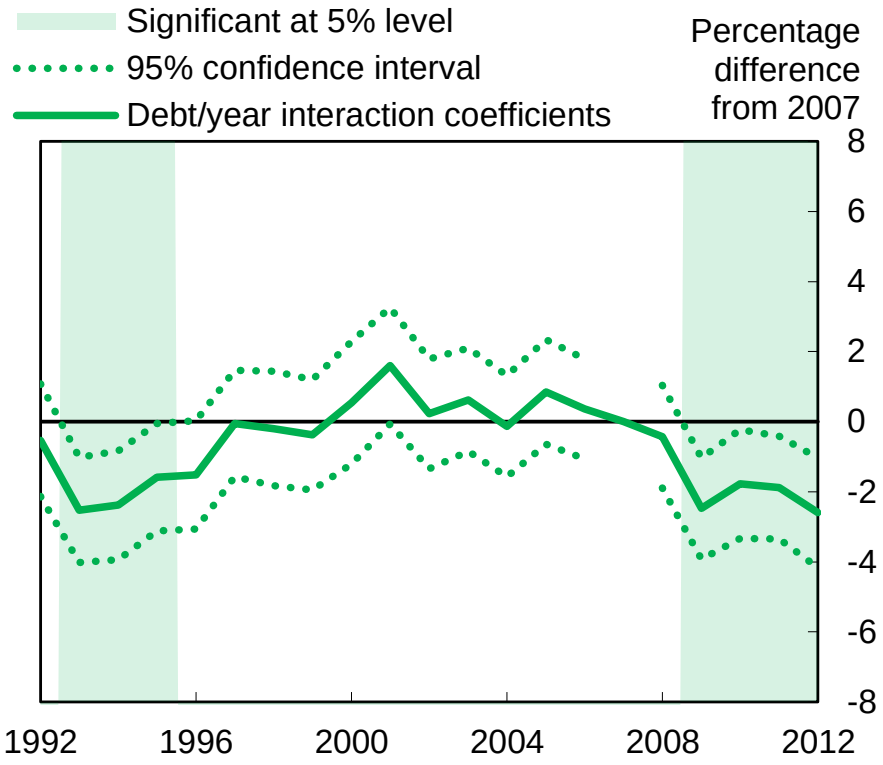
Cross sectional regression results

Impact of a 1 unit increase in debt to income ratio on consumption, relative to 2007

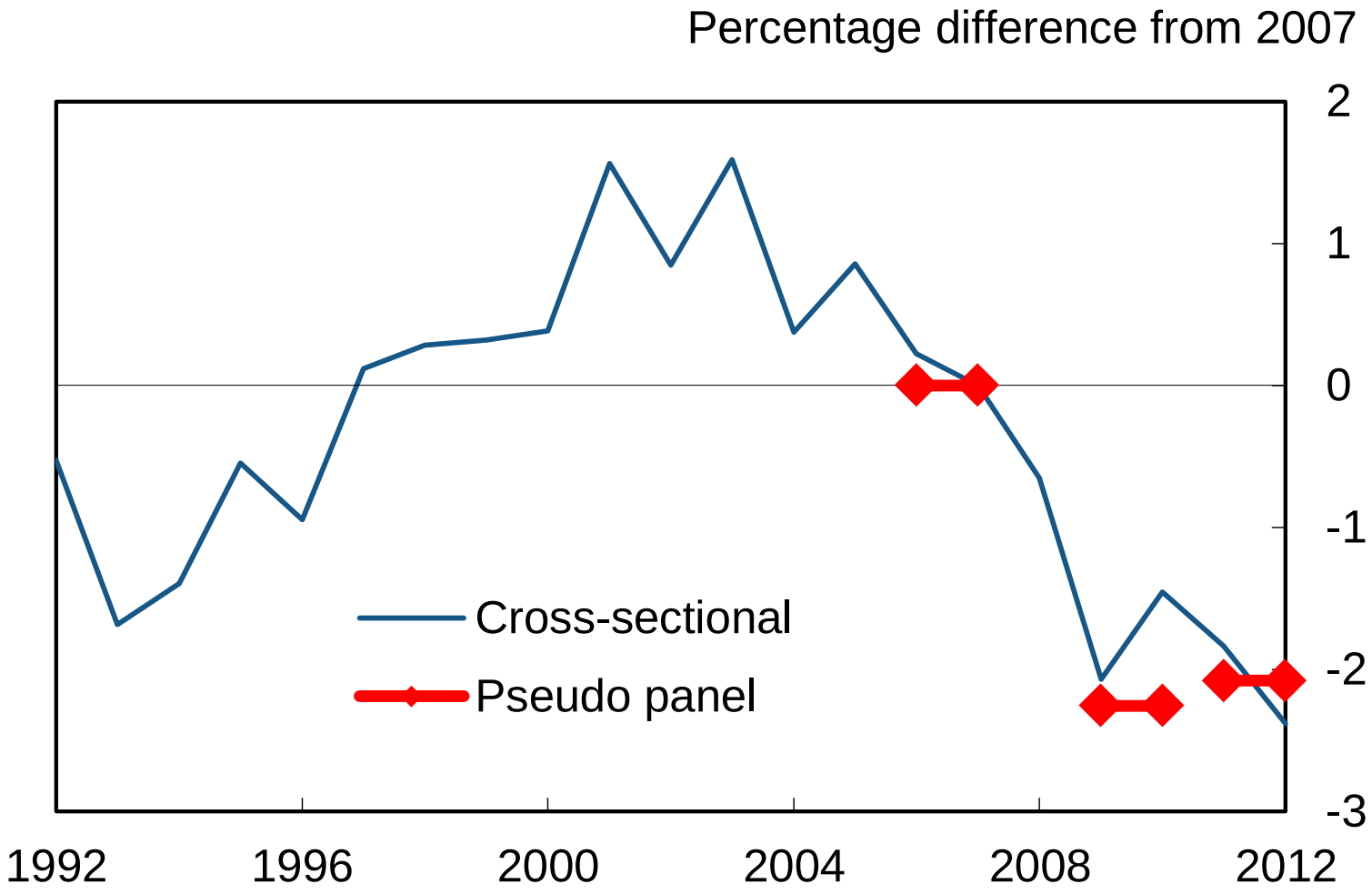
Durables



Non-durables



Impact of debt on aggregate consumption



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Survey evidence on why indebted household might have made larger cuts in spending

- Hard to prove causality from observing correlations, even if controlling for other factors
- Survey evidence can be helpful
- Use Bank of England/NMG household survey
  - Annual survey since 2004 of 2-6000 households
  - Includes data on balance sheets and attitudes to spending

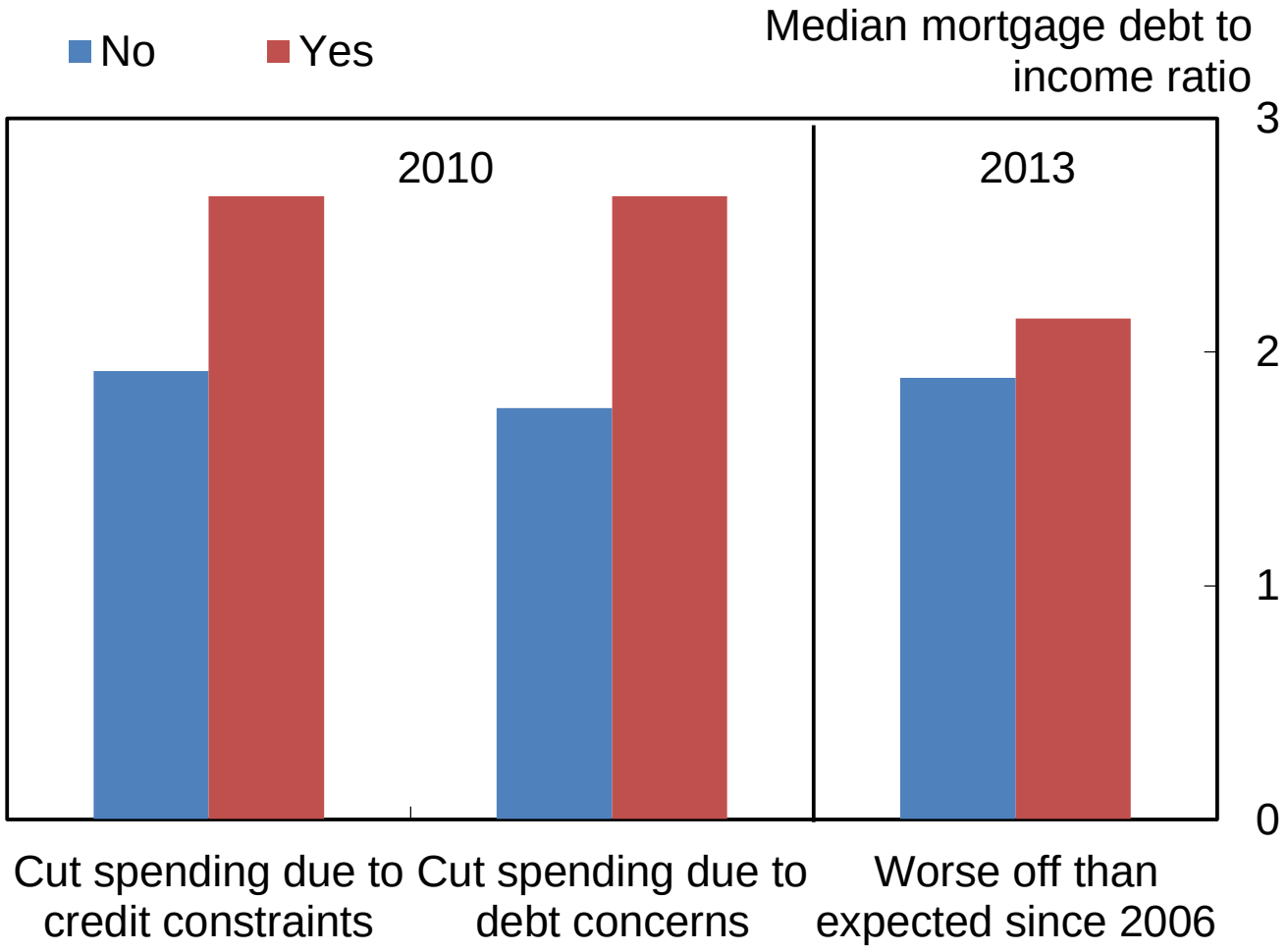
Explanations why indebted household might have made larger cuts in spending

- Highly indebted households were disproportionately affected by tighter credit conditions
  - ‘Have you been put off spending because you are concerned you will not be able to get access to further credit when you need it?’

- Highly indebted households become more concerned about their ability to make future repayments
  - ‘How concerned are you about your current level of debt?’, and ‘What actions are you taking to deal with your concerns?’

- Highly indebted households made larger adjustments to future income expectations
  - ‘Would you say you are better or worse off financially now than you would have expected at the end of 2006, before the start of the financial crisis?’

Mortgage debt to income and NMG survey responses



Characteristics of mortgagors cutting spending due to debt concerns

	Reduced spending in response to debt concerns (2013 data)	
	Yes	No
Median mortgage debt to income ratio	2.4	1.7
Proportion who are worse off than they expected in 2006	73%	39%
Proportion who are think that a sharp fall in income is quite likely over the next year	33%	19%

Conclusion

- Indebted UK households made larger cuts in spending – relative to income – following the financial crisis
- Those effects have persisted, at least up to 2012
- Two different econometric approaches give broadly similar results – worth about 2% off aggregate consumption
- Hard to prove a causal link, but survey evidence suggests larger cuts in spending by indebted households reflect a combination of tighter credit conditions and concerns about ability to make future repayments

Policy implications

- June 2014 Financial Policy Committee recommendations:
  - Lenders should apply stress test to assess affordability if Bank Rate rose by 3 percentage points in first 5 years of loan
  - Lenders should limit proportion of mortgages at loan to income ratios of 4.5 or above to 15% of new mortgage lending

- FPC wanted to insure against further a significant increase in number of highly indebted households

- Evidence on indebted households making larger cuts in spending during financial crisis in UK and elsewhere was an important reason for this