Introduction
Stress testing households with micro data
Credit risk
Consumption risk (Work in progress)
What have we learned?

What have we learned?

Household micro data in stress testing and macroprudential policy at Norges Bank

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Motivation of the micro data based analysis

- Evaluate households vulnerability based on micro data
- Direct credit risk
- Demand risk

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Household micro data. Why bother?

- There is a link between excessive credit growth and financial crises.
- What is excessive credit growth?
  - Households are heterogeneous. Aggregates hides important information.
  - What characterize households with excessive credit?
  - Credit risk vs risk of fall in consumption?
- Administrative register data compiled by Statistics Norway
  - Tax-return, all Norwegian residents, same dwelling.
  - 1987-2004: Survey, 2004-2012: Full panel
  - Household characteristics, income, total debt, housing, tax-values wealth.

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The balance sheet of Norwegian households. 2012

Sources: Statistics Norway and Norges Bank

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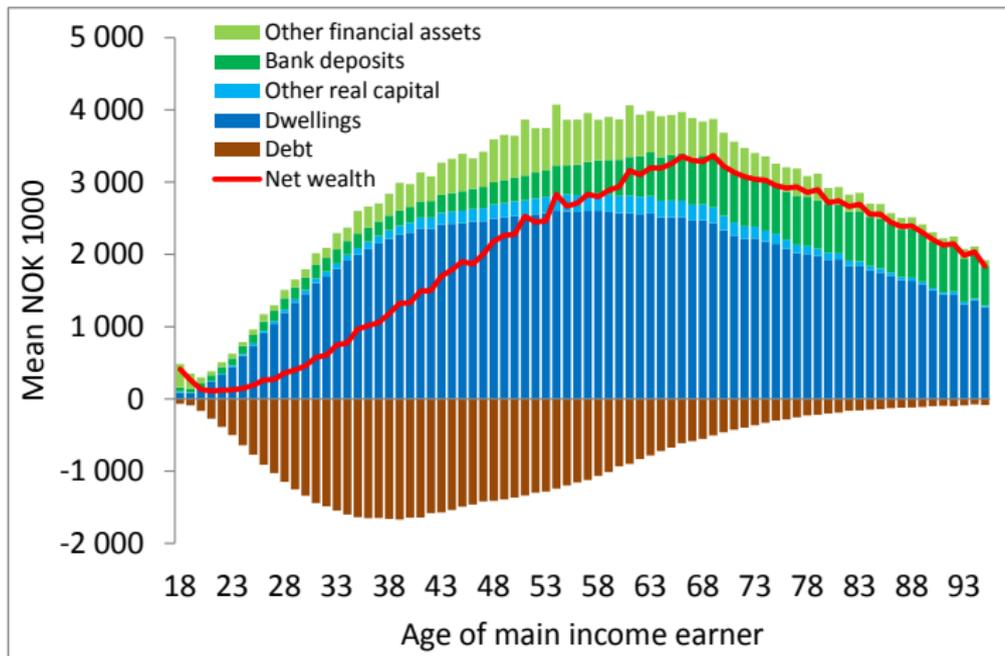
Debt increase by housing market affiliation

Sources: Statistics Norway and Norges Bank

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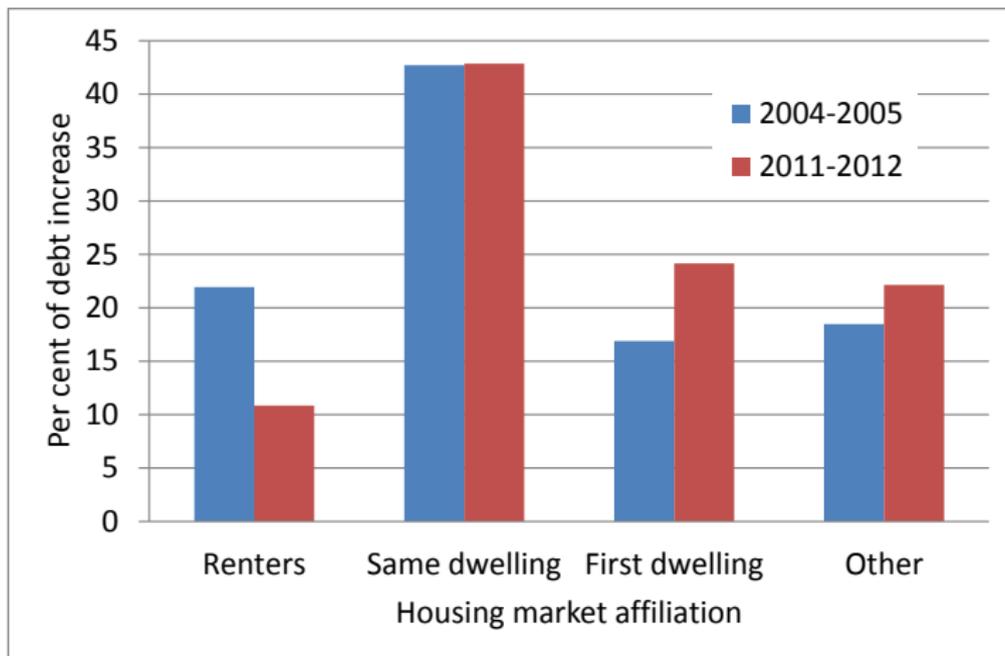
Debt by age groups

Sources: Statistics Norway and Norges Bank
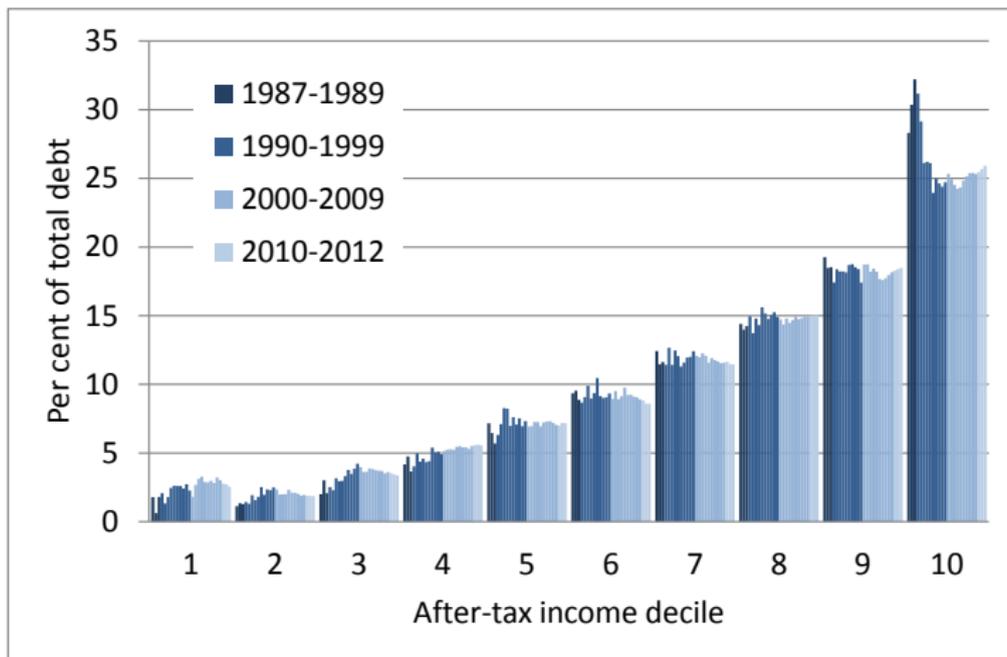
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Debt by income groups

Sources: Statistics Norway and Norges Bank

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Debt-to-disposable income ratio. Cohort analysis (Video)

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Debt-to-disposable income ratio. Cohort analysis (Static)

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High loan to income ratio
Low margins
High loan to value
Combined criteria
Sensitivity analysis
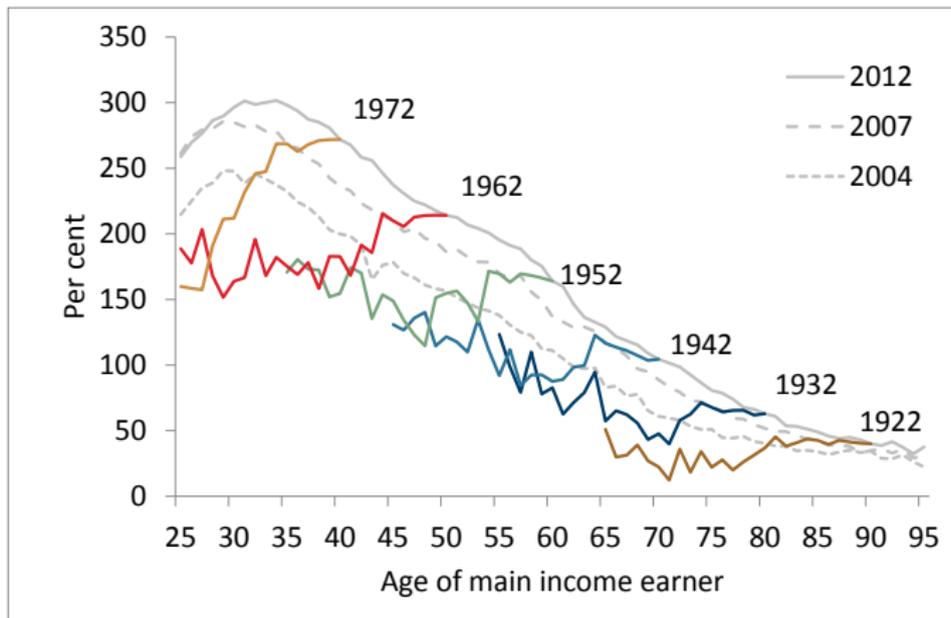
Debt to disposable income and default rates

Sources: Statistics Norway and Norges Bank

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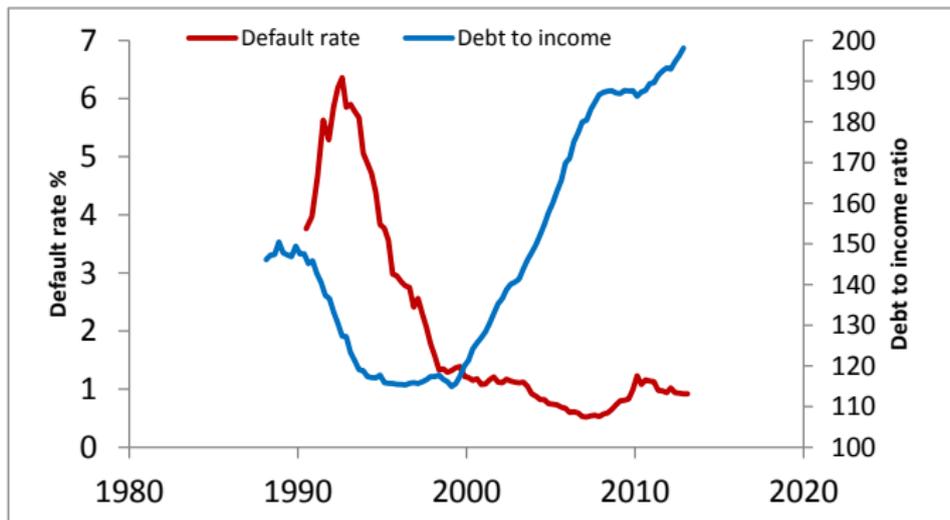
Debt in high risk households

- Three criteria that define households with high credit risk
  1. High debt to income ratio (DTI)
  2. Low financial margin (MRG)
  3. High loan to value (NDV)
- Three risk drivers
  1. Increased debt servicing cost
 2. Fall in house value
  3. Fall in debt servicing income

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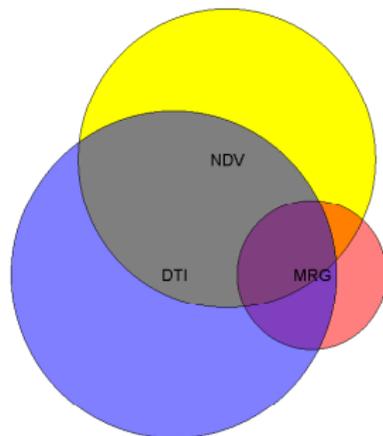
Households with debt exceeding five times disposable income

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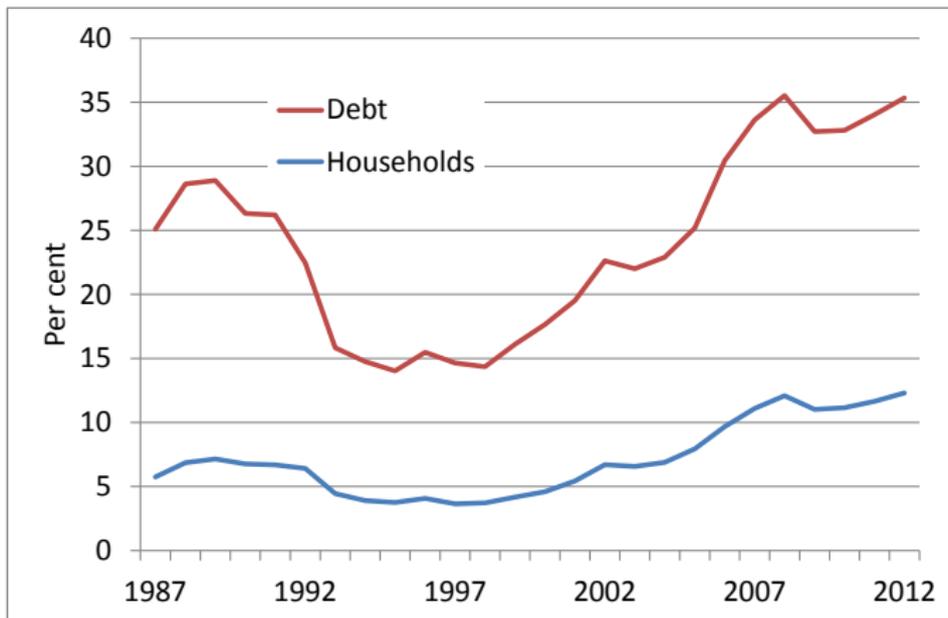
Margins and debt-servicing income

Sources: Statistics Norway and Norges Bank

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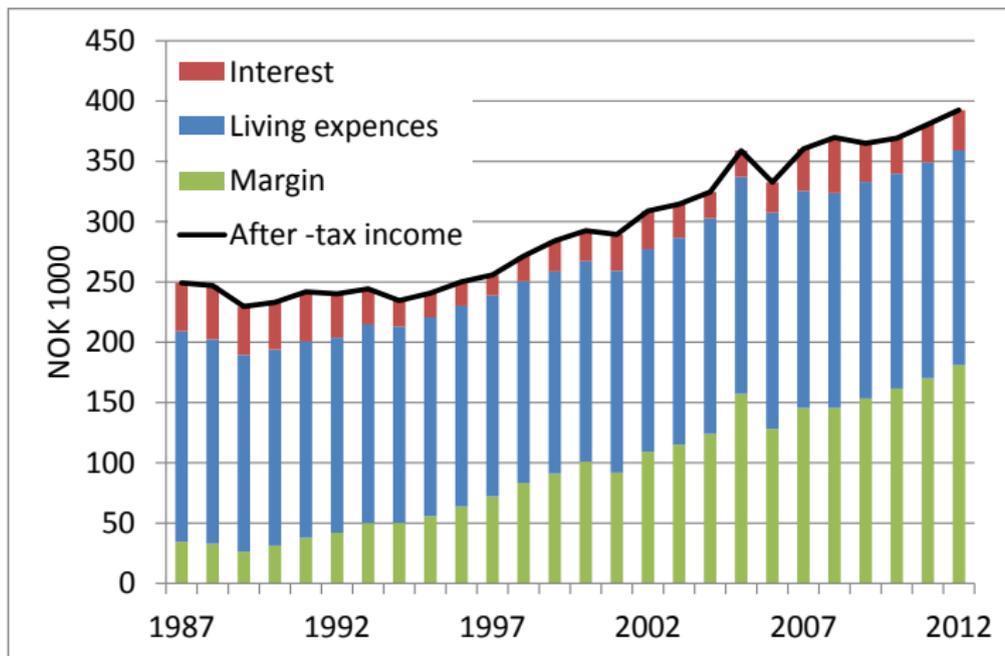
Debt by size of margin

Sources: Statistics Norway and Norges Bank

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Loan to value

Sources: Statistics Norway and Norges Bank

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Net debt exceeding house value

Sources: Statistics Norway and Norges Bank

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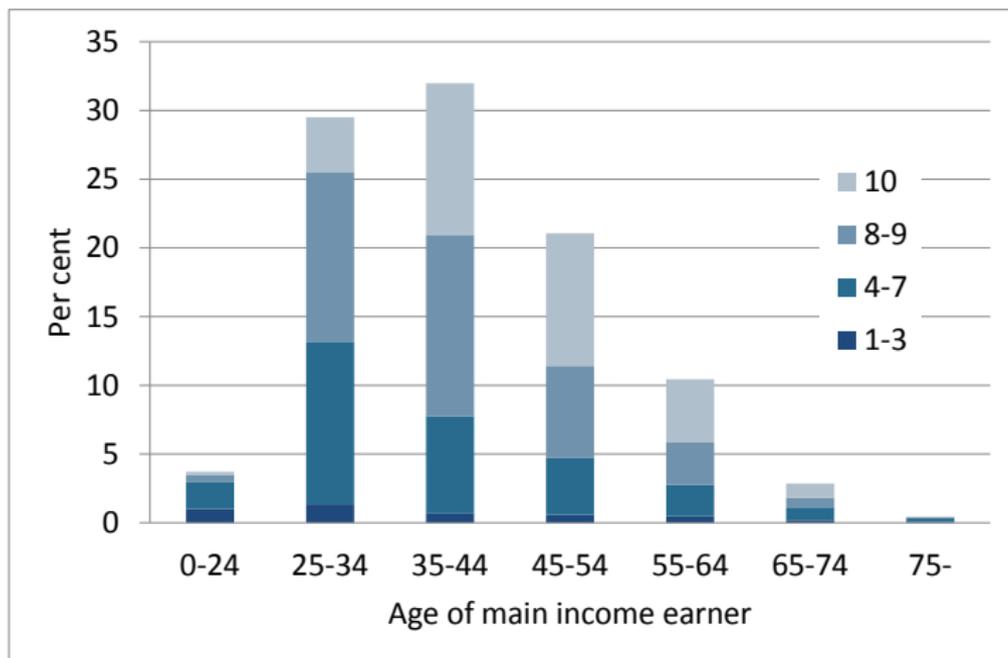
Debt in households that violates the combined criteria

Debt violating criteria 2012
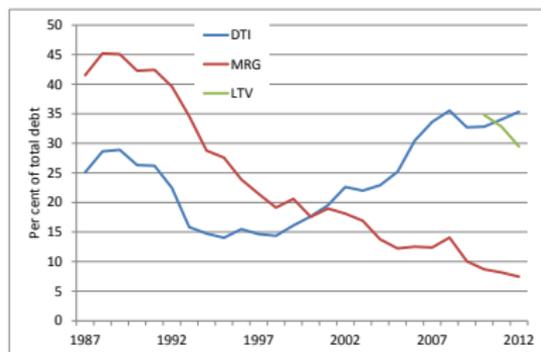
### Debt violating criteria 2012

Criteria	Households	Debt
DTI	12	35
MRG	16	8
NDV	24	30
DTI + MRG	3	5
DTI + NDV	5	16
MRG + NDV	7	4
DTI + MRG + NDV	1	2

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Debt at risk given combination criteria

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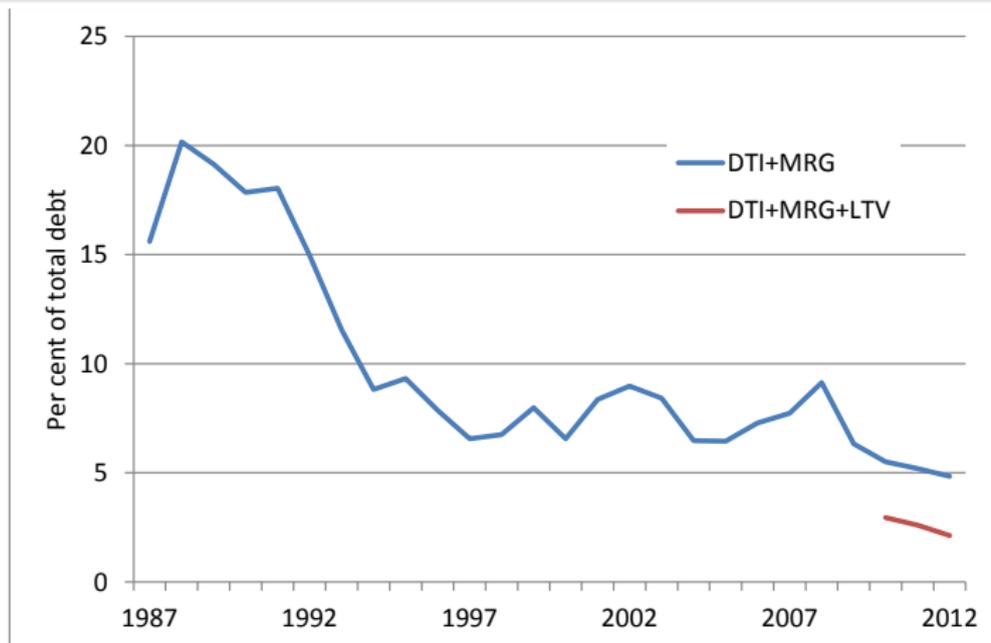
Distribution of debt of households that violate the combined criteria

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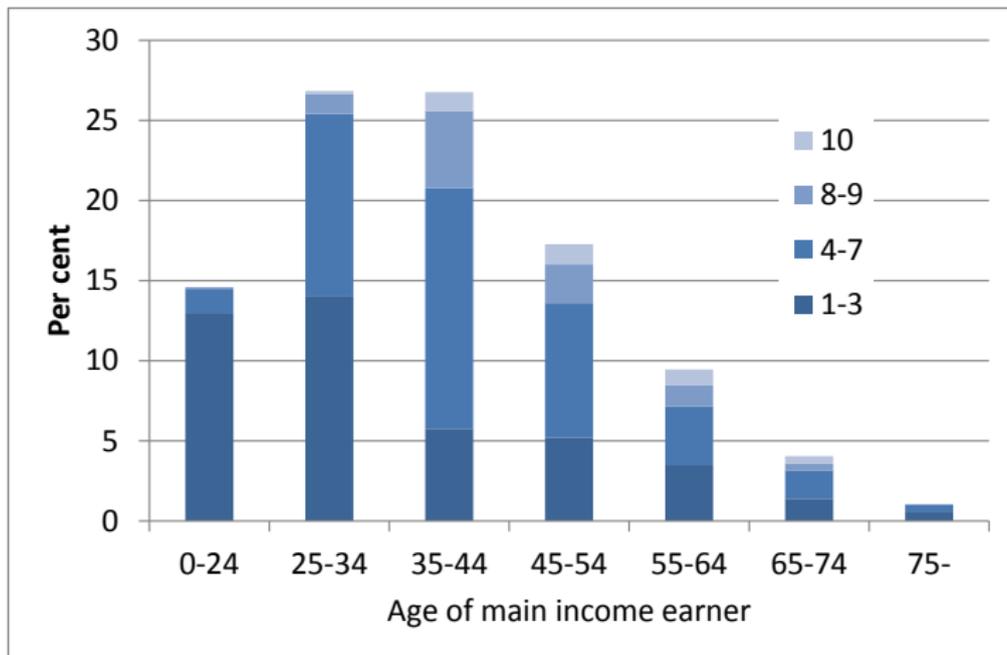
3 pp increase in interest rate 30% fall in house prices
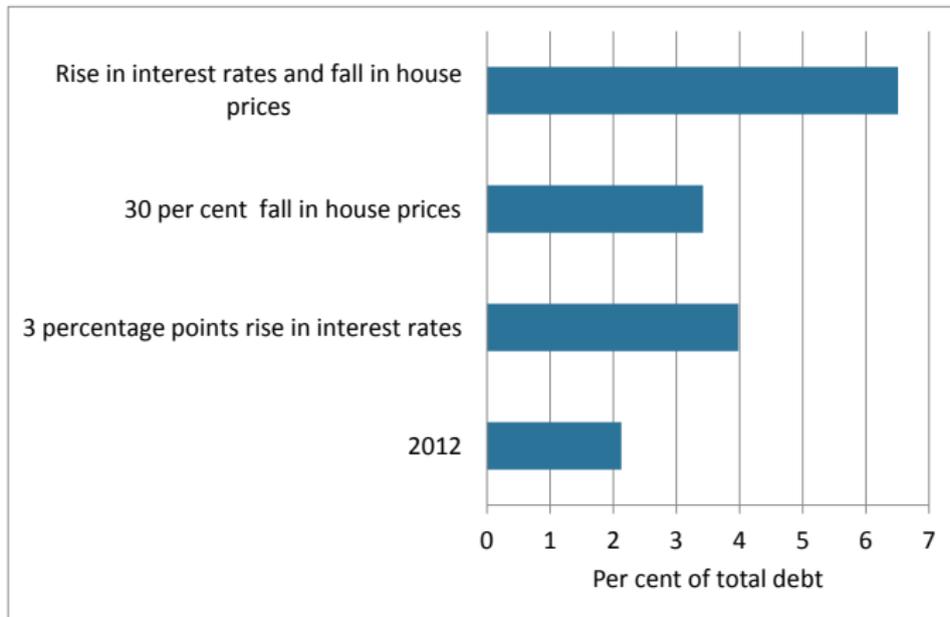
Sources: Statistics Norway and Norges Bank

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The set up
3 p.p. interest rise

Effect on "consumption potential"

Sources: Statistics Norway and Norges Bank

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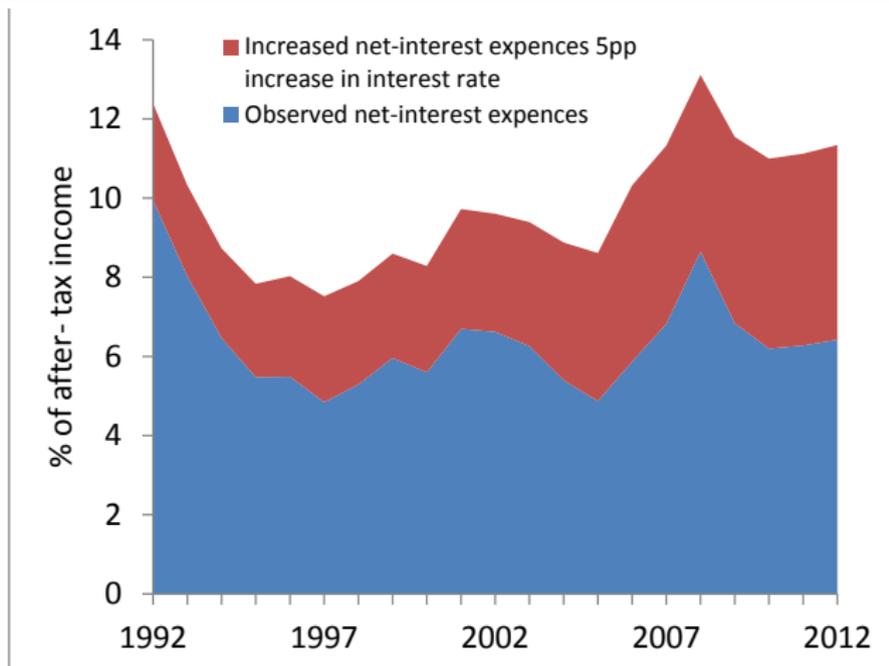
Consumption risk (down payments)

- "Consumption potential" = Income - tax - interest - down payments
- Assumes that there exists a stable interest-to-income and loan-to-value path for the households over the life-cycle
- A permanent rise in interest rates or fall in house prices distort these stable paths
- Households reduce debt to get back to the stable path over a 10 year horizon
- Effect on first year debt and consumption potential

	Debt	Households
No net debt	2.9	33.5
Cannot afford principal payments	8.7	9.3
Can afford some principal payments	8.3	3.3
Can afford full principal payments	80.1	53.9

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Interest rate increase. An illustration
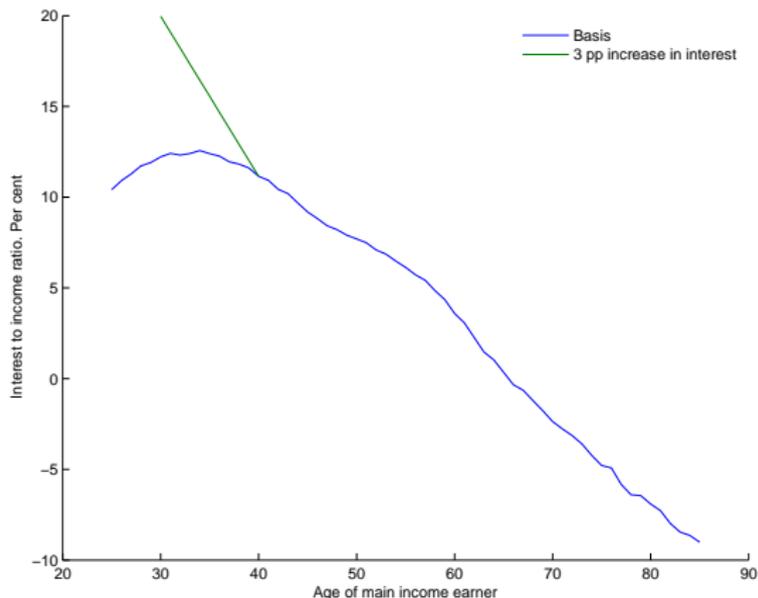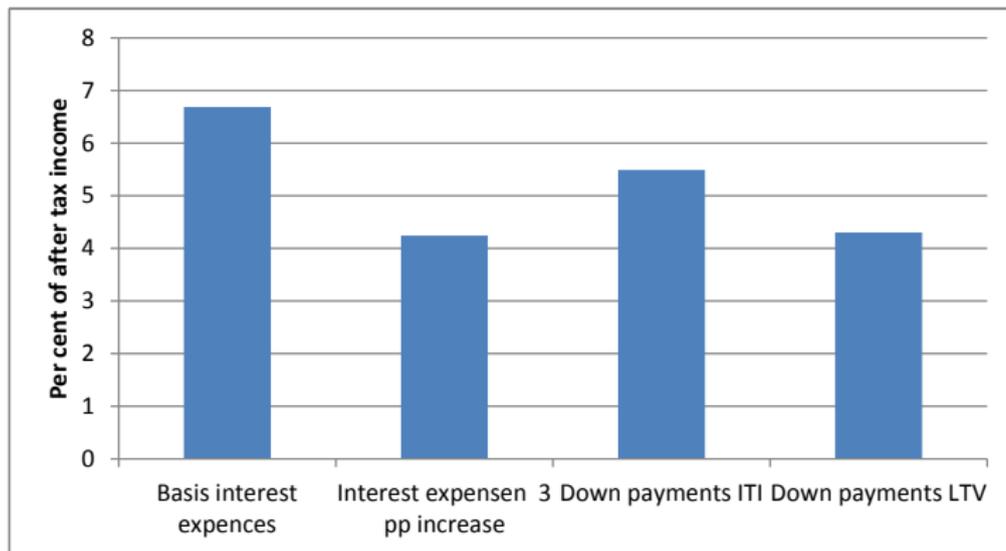
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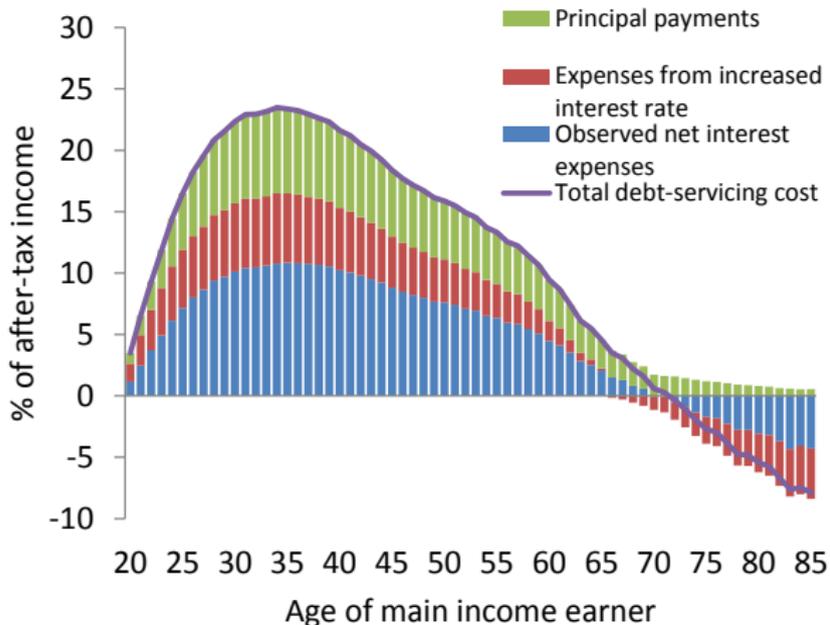
What have we learned?

- Macro data masks important information on household heterogeneity.
- Using micro data in macro-stress testing is demanding, but can provide important information.
- Macro shocks affect different household groups differently.
- The households have used the benign economic environment, low interest rate, low cost of living and and good income development to increase their debt.
- The share of risky debt is small, but the share may increase if interest rates climb or house prices fall.

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References

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