

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

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The institutional setup in Norway

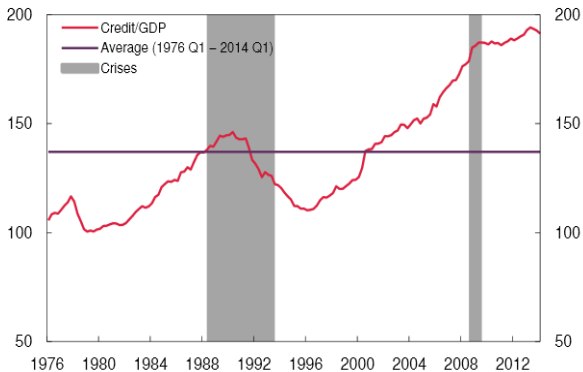
- The Ministry of Finance sets the level of the Countercyclical Capital Buffer four times a year.
- Norges Bank draws up a decision basis and provides advice to the Ministry regarding the level of the buffer.
- In drawing up the basis, Norges Bank and Finanstilsynet (Financial Supervisory Authority of Norway) exchange relevant information and assessments.
- The advice is published when the Ministry of Finance has made its decision.
- Finanstilsynet issues guidelines for banks on LTV and LTI

Countercyclical capital buffer

- The countercyclical capital buffer should satisfy the following criteria:
 - 1 Banks should become more resilient during an upturn
 - 2 The size of the buffer should be viewed in the light of other requirements applying to banks
 - 3 Stress in the financial system, should be alleviated
- Four indicators:
 - 1 Total credit/GDP
 - 2 House prices to disposable income
 - 3 Real commercial property prices
 - 4 Banks wholesale funding as percentage of total assets.

Total credit/GDP

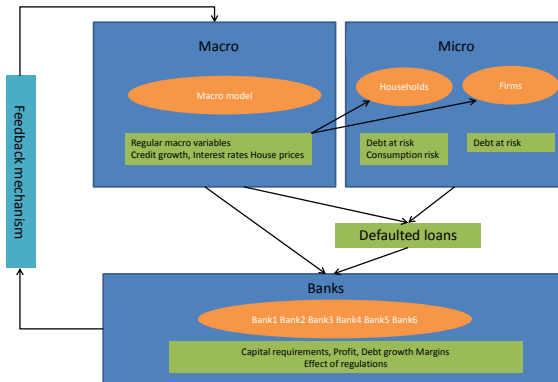
Chart 3.1 Total credit¹⁾ mainland Norway as a percentage of mainland GDP.
Percent. 1976 Q1 – 2014 Q1



1) The sum of C2 households and C3 non-financial enterprises in mainland Norway (all non-financial enterprises pre-1995). C3 includes C2 and foreign debt.

Sources: Statistics Norway, IMF and Norges Bank

The stress test frame work in Norges Bank

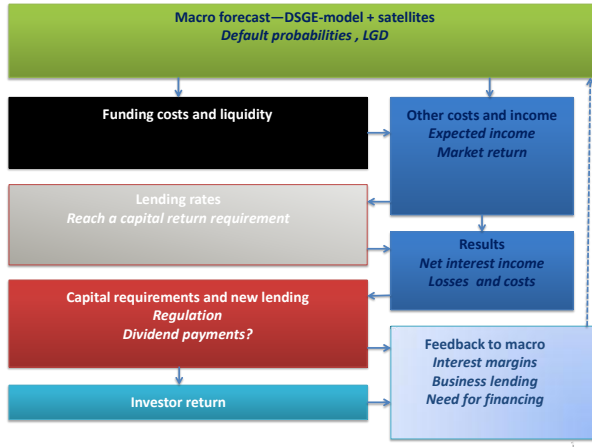


Sources: Statistics Norway and Norges Bank

Stress tests and the macro prudential framework
Stress testing households with micro data
Credit risk
Consumption risk (Work in progress)
What have we learned?

The institutional setup in Norway
Countercyclical capital buffer
The stress test frame work in Norges Bank

The dynamic balance sheet bank model

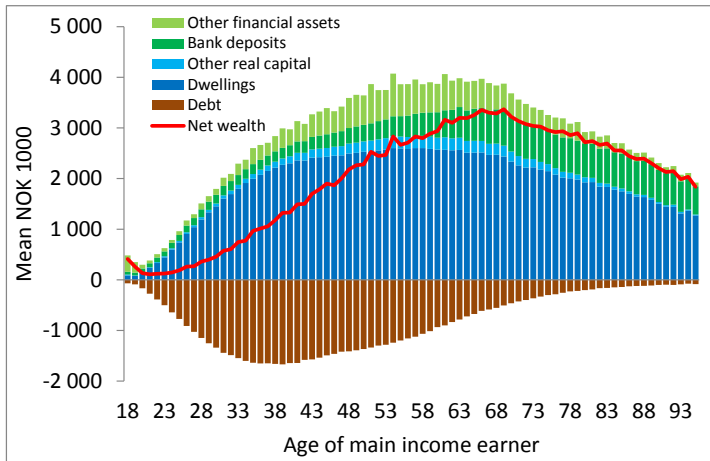


Sources: Statistics Norway and Norges Bank

Household micro data. Why bother?

- There is a link between excessive credit growth and financial crises.
- What is excessive credit growth?
 - Credit risk vs risk of fall in consumption?
 - What characterize households with excessive credit?
 - Households are heterogeneous. Aggregates hides important information.
- 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.

The balance sheet of Norwegian households in 2012



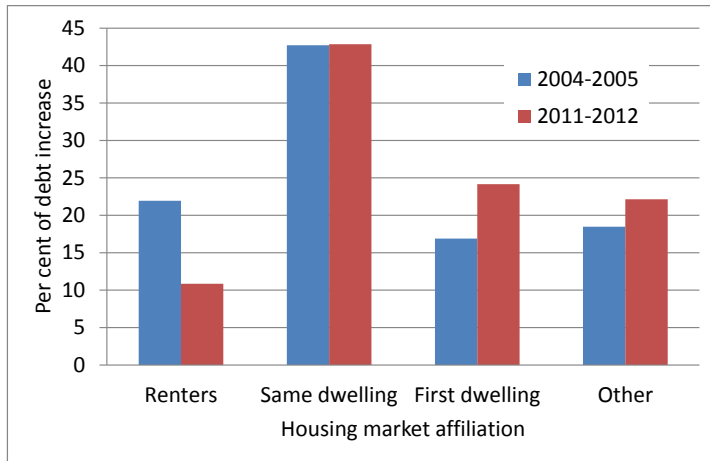
Sources: Statistics Norway and Norges Bank

Debt by age groups



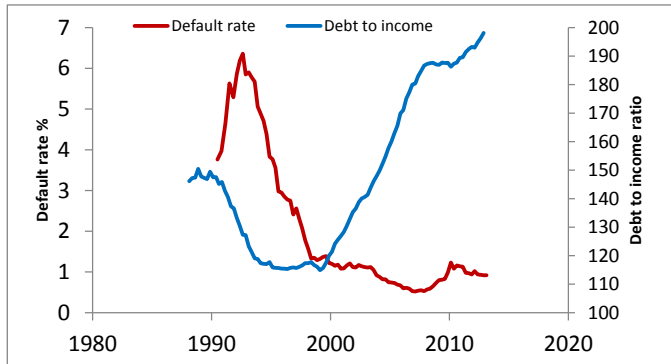
Sources: Statistics Norway and Norges Bank

Debt increase by house market affiliation



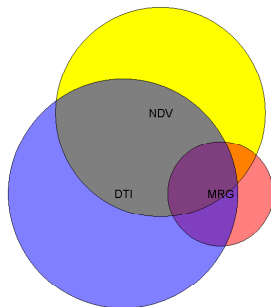
Sources: Statistics Norway and Norges Bank

Debt to income and default rates

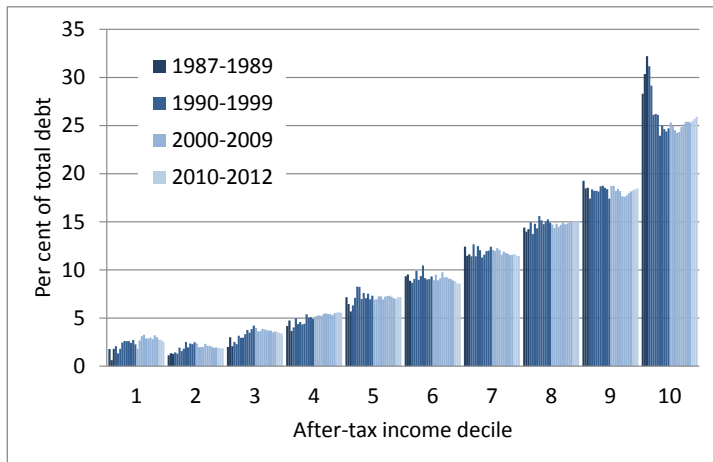


Debt in households exposed for credit risk

- Three criteria for household 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



Debt by income groups



Sources: Statistics Norway and Norges Bank

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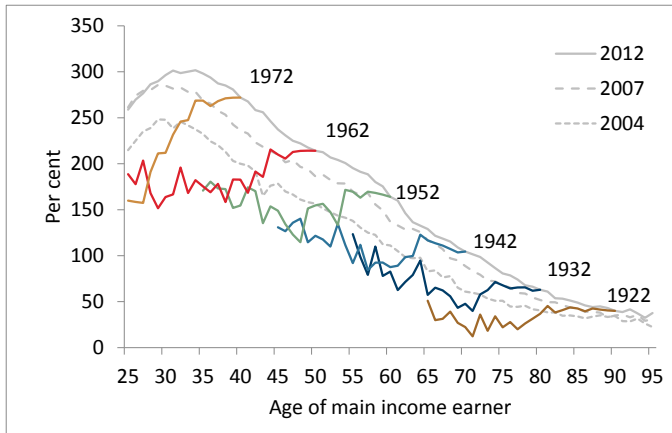
High loan to income ratio
Low margins
High loan to value
Combined criteria
Sensitivity analysis

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

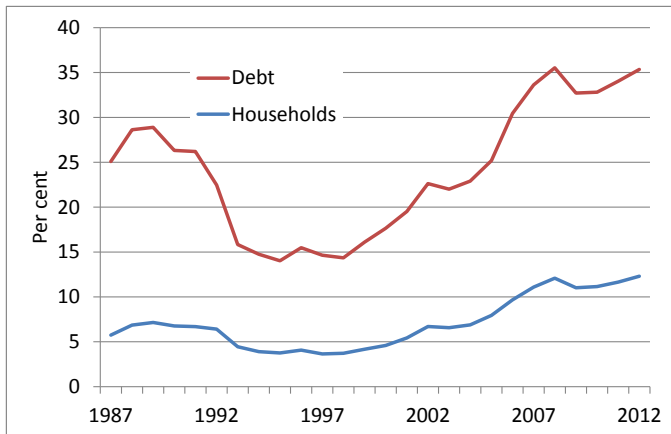
Source: Statistics Norway and Norges Bank.



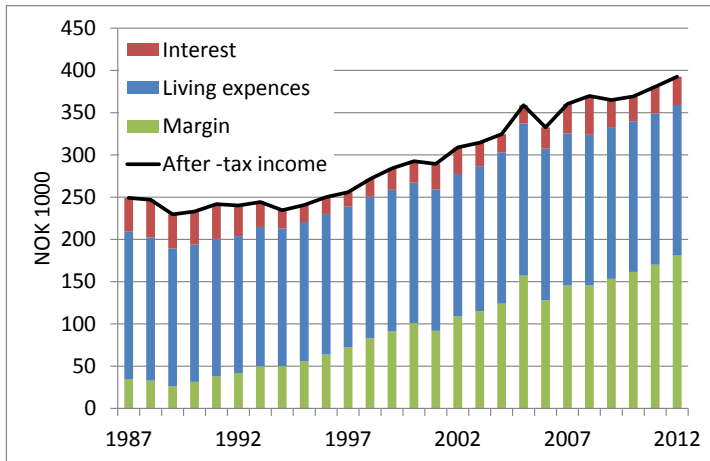
Debt-to-disposable income ratio. Cohort analysis (Static)



Households with debt exceeding five times disposable income

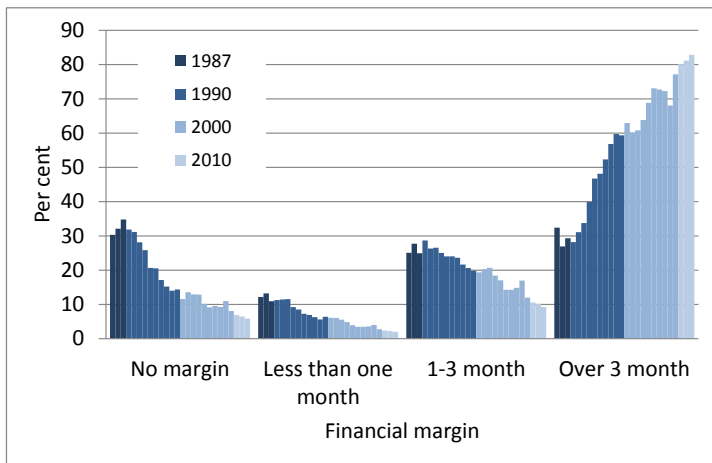


Margins and debt-servicing income



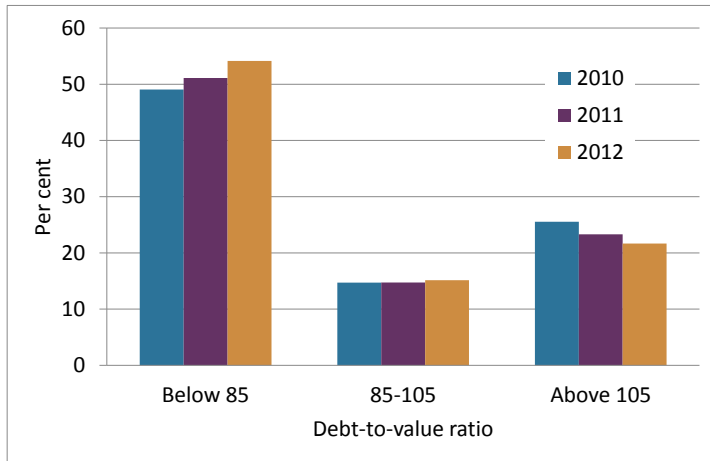
Sources: Statistics Norway and Norges Bank

Debt after margin



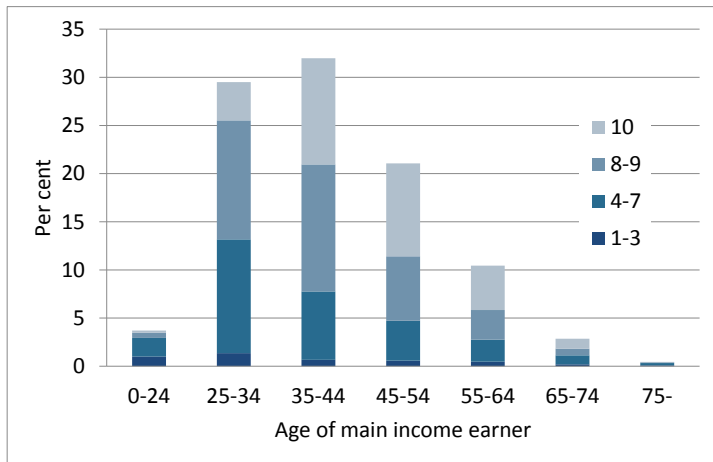
Sources: Statistics Norway and Norges Bank

Loan to value



Sources: Statistics Norway and Norges Bank

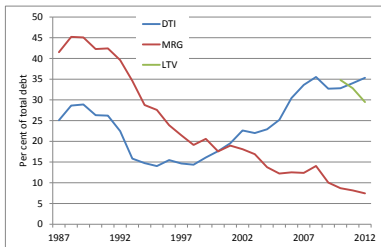
Net debt exceeding house value



Sources: Statistics Norway and Norges Bank

Debt in households that violates the combined criteria

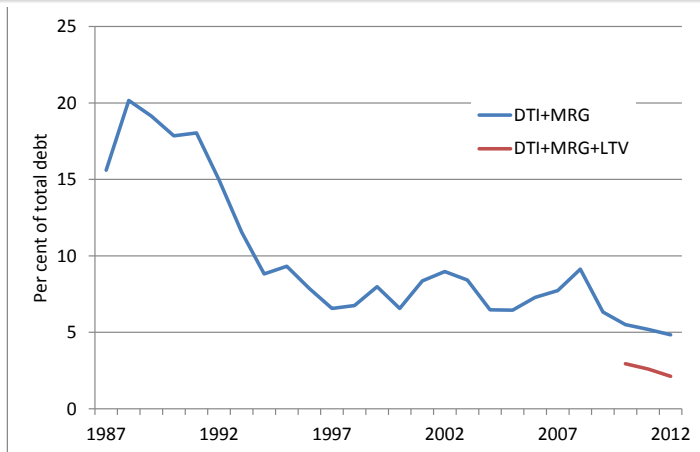
Debt violating criteria 2012



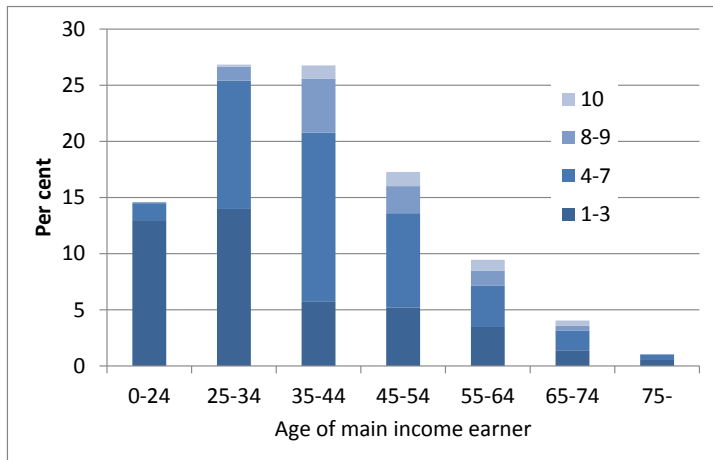
Debt violating criteria 2012

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

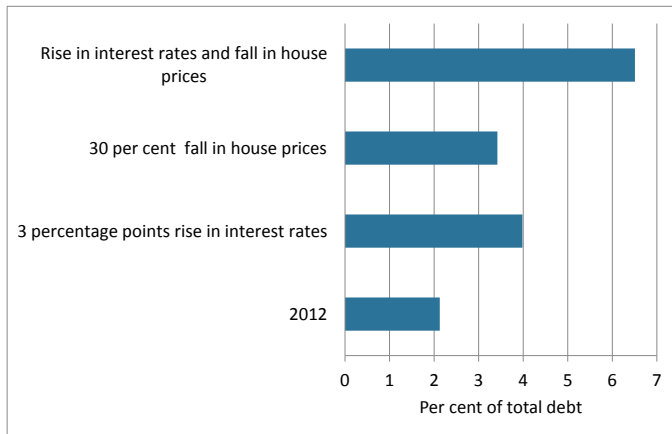
Debt at risk given combination criteria



Distribution of debt of households that violate the combined criterion



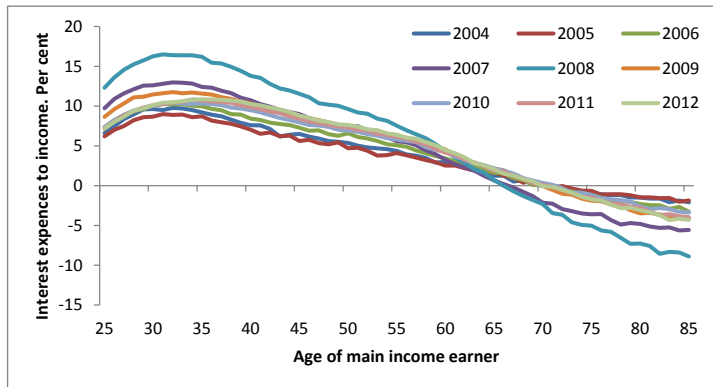
3 pp increase in interest rate 30% fall in house price



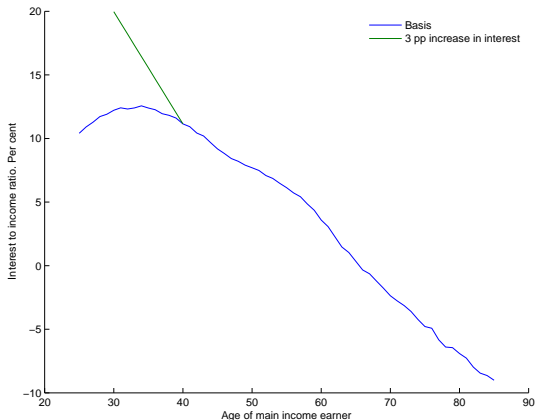
Consumption risk (down payments)

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

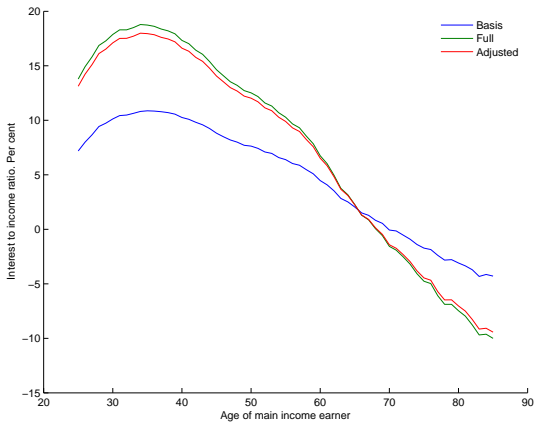
Interest rate an illustration



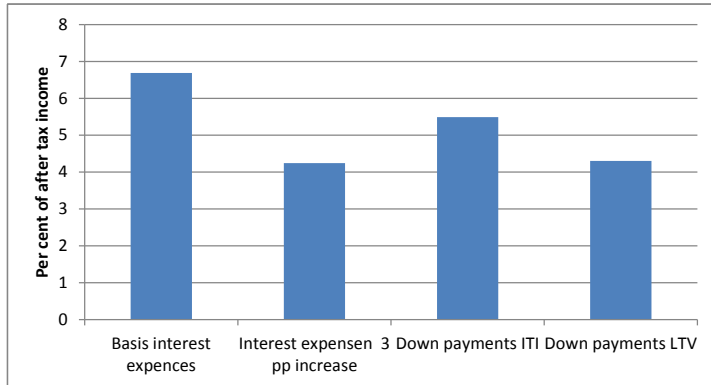
Interest rate an illustration



Interest to income ratio



Effect on "consumption potential"



What have we learned?

- Macro data masks important information on heterogeneity in households.
- Using micro data in macro-stress testing is demanding, but can give 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.

References

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- Evidence of a change in banks' lending practices after the financial crisis Haakon Solheim and Bjørn Helge Vatne, Economic Commentaries 3/2014. Norges Bank
- Measures of household credit risk Haakon Solheim and Bjørn H. Vatne, Economic Commentaries 8/2013 Norges Bank
- Criteria for an appropriate countercyclical capital buffer Norges Bank Papers 1/2013 Norges Bank