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The Wealth and Debt of Danish Families

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Danish households have large balance sheets

But net wealth comparable to other Nordic countries

Household debt and assets, 2012

Two important questions

Does the high debt level among Danish households pose a threat to…

1. Financial stability?
   - How is the debt distributed across families?
   - How resilient are Danish families to e.g. interest rate hikes or unemployment?

2. Macroeconomic stability?
   - How sensitive are families to hike in interest rates?
   - A direct effect of high leverage on consumption during times of financial unrest?

Short answers:

1. No, not directly
2. Yes, probably

Micro data on household finances I

Data from administrative registers:

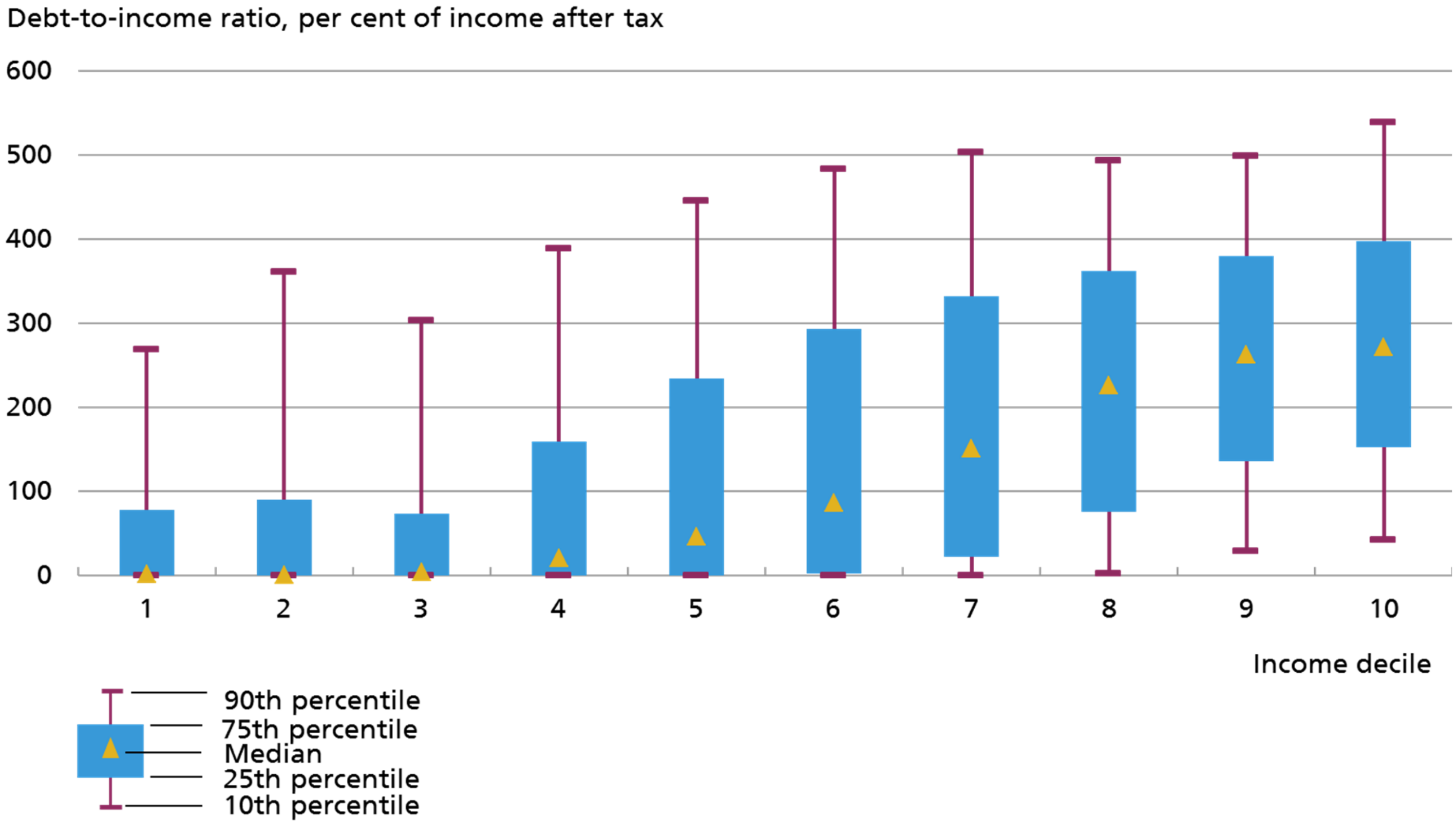
- Detailed annual data on income, wealth and debt of every adult member of the Danish population.
- Information mostly from tax returns. Collected by Danish tax authority, organised, anonymised and made available to researchers by Statistics Denmark.
- Background information from other registers: age, education, area of residence, home ownership status, area of residence, history of hospitalization.
- Information about family relations from population register: Possible to aggregate income and wealth data at the family level.

Micro data on household finances II

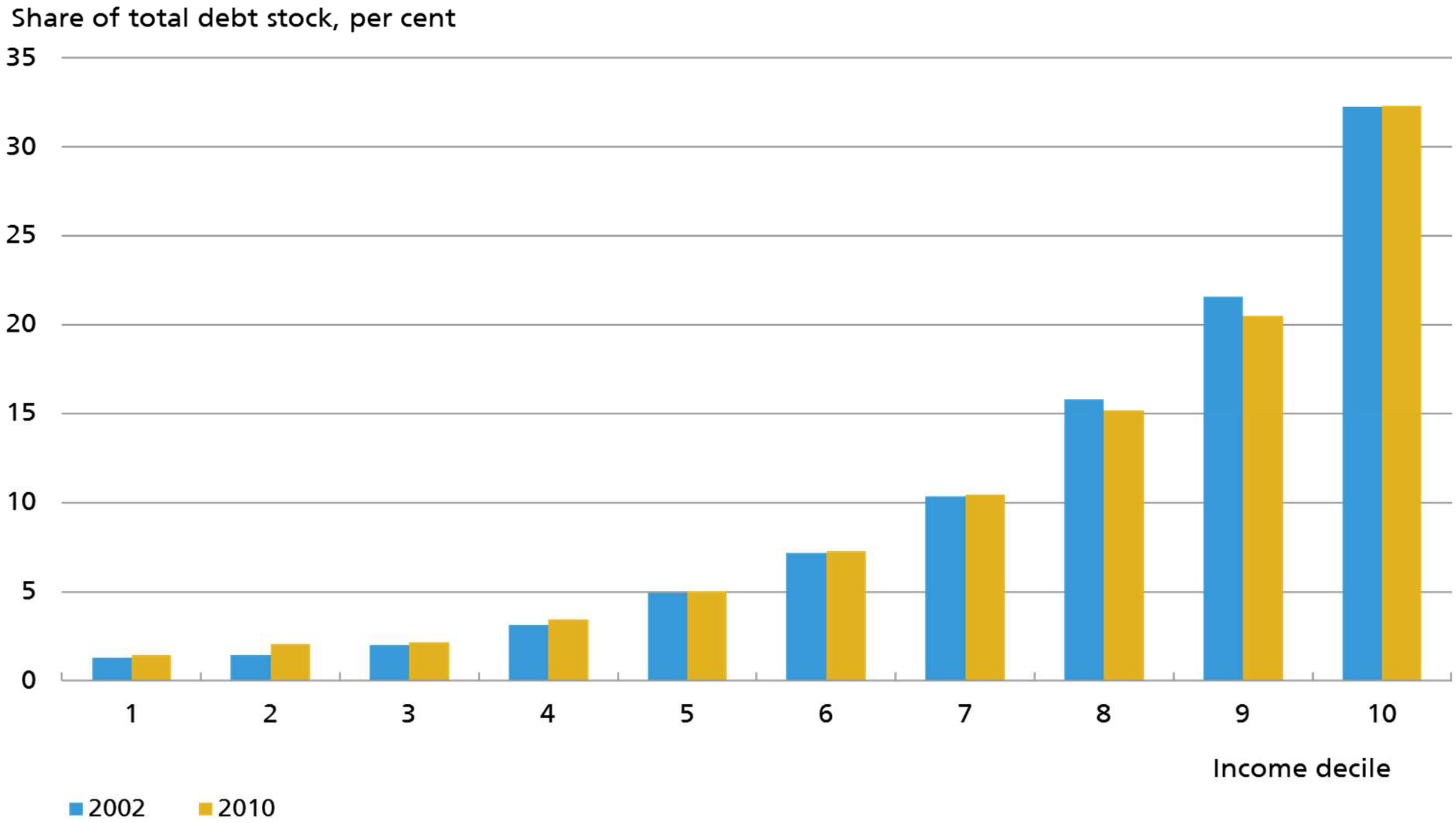
Data from Danish mortgage credit banks:

- Highly detailed data on all mortgage loans to private individuals in 2009-11.
- For each loan: Information on e.g. initial principal, remaining balance, interest rate, time to maturity, fixed vs. adjustable rate, amortization, LTV ratio, arrears, and borrower ID.
- Anonymised and matched to income-, wealth and background data from administrative registers by Statistics Denmark.
- Allows us to make an accurate assessment of the financial shape and risk-profile of each family.

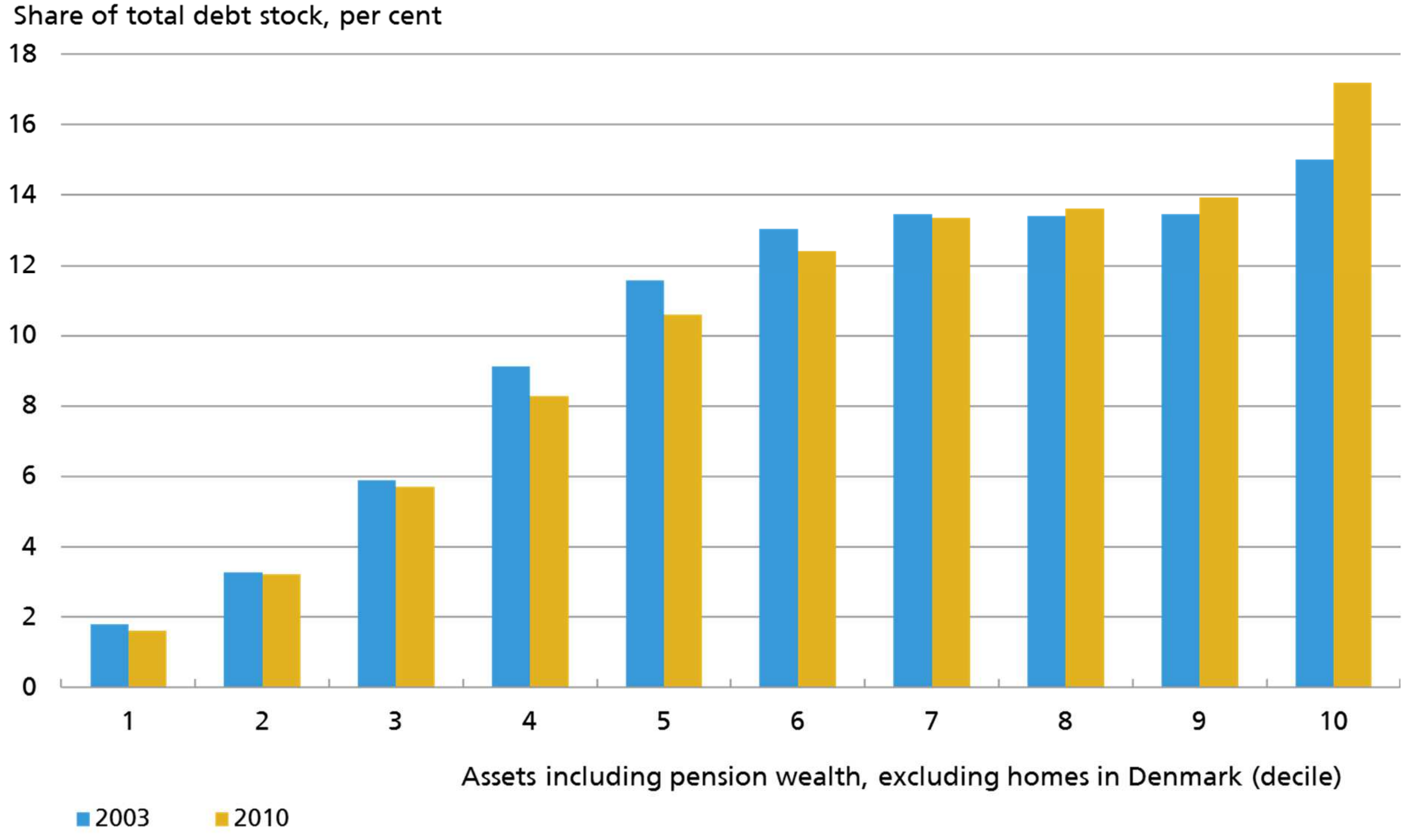
Debt-to-income ratios higher among high-income families



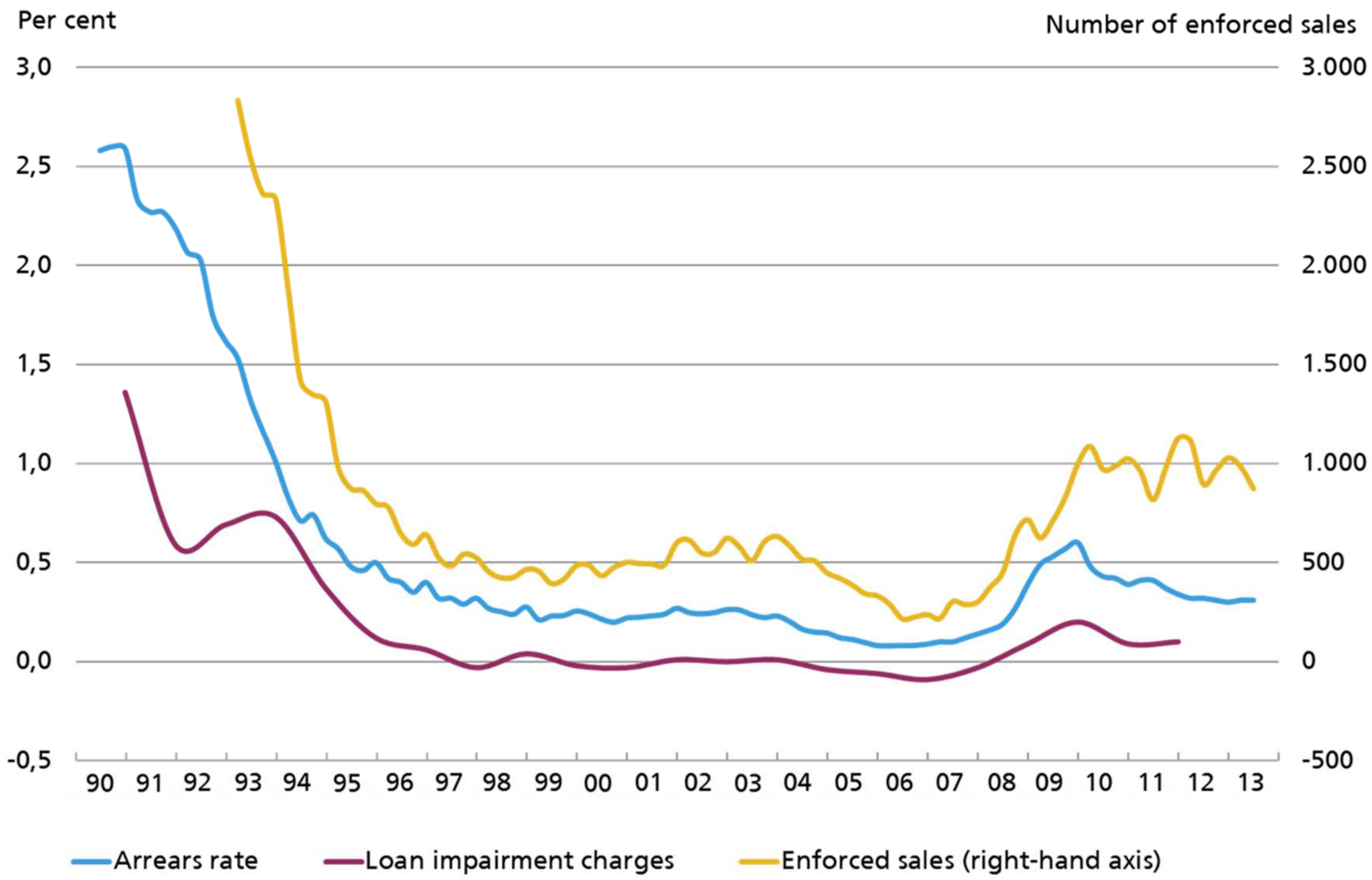
Debt is highly concentrated among high-income families…



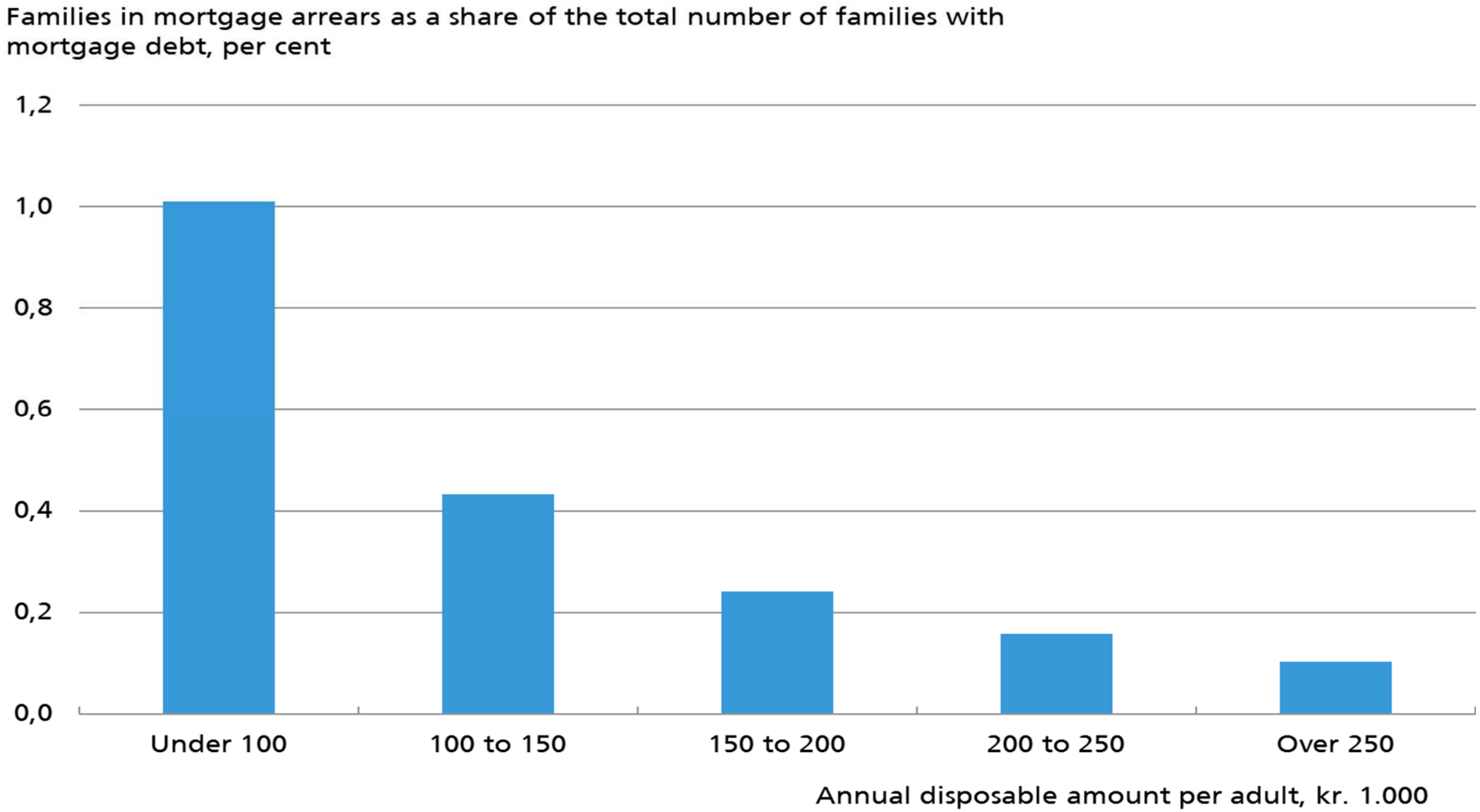
… and among families with large financial assets



Arrears rate for mortgage loans remained low during financial crisis, and has since fallen



Very few families fall into mortgage arrears, even among those with tight finances



Econometric analysis of mortgage arrears

Probit model with binary indicator of mortgage arrears as dependent variable:

$$\text{Prob}(\text{arrears}_{t+1}) = \Phi(x_t \beta)$$

Key explanatory variables:

- Disposable amount per adult (levels and relative changes)
- Stock of liquid assets and home equity
- Pension savings
- Debt service ratio

Controls: Age, education, area of residence, family size, unemployment history, history of illness, divorce etc.

Use estimation results to simulate effects of macro economic stress scenarios at the micro level.

Macroeconomic stress tests : Only very modest increase in no. of families in mortgage arrears

EXPECTED EFFECTS IN SCENARIOS Table 10

	Scenario 1	Scenario 2
Macroeconomic assumptions		
Change in interest rates, percentage points	5.7	0.0
Change in gross unemployment, percentage points	4.0	4.5
Change in house prices, per cent	-14.0	-16.5
Change in stock prices, per cent	-46.0	-46.0
Expected consequences		
Average change in probability of arrears for families not hit by unemployment, percentage points	0.19	0.04
Average change in probability of arrears for families hit by unemployment, percentage points	2.06	1.47
Average change in probability of arrears for all families taken as one, percentage points	0.29	0.13
Expected increase in the number of families in arrears by 105 days on the June instalment	2,816	1,236

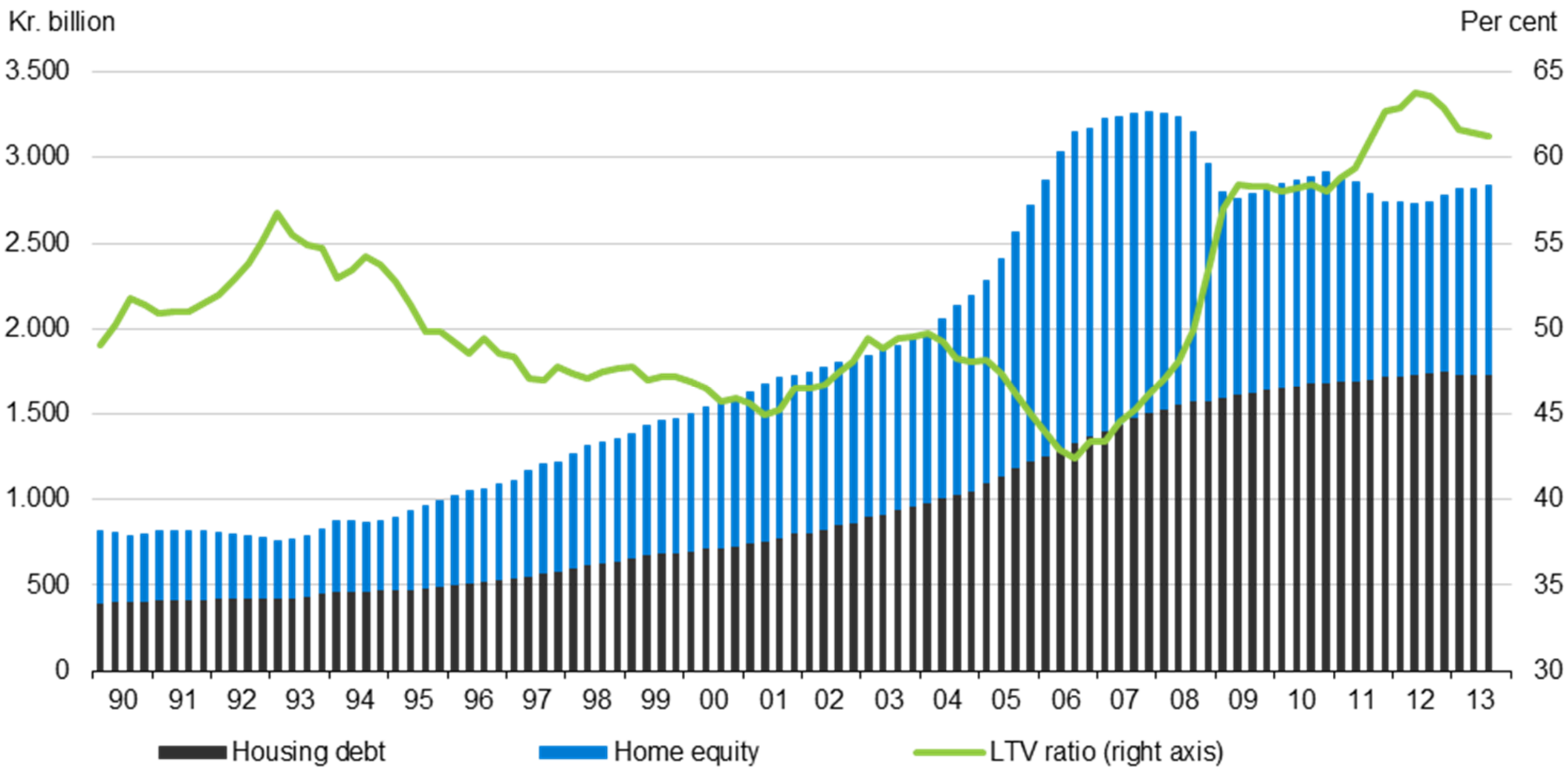
What about macroeconomic stability?

High debt level + increasing use of variable-rate mortgages $\Rightarrow$ households' disposable income has become more sensitive to fluctuations in interest rates

- Private consumption may react strongly to interest rate changes
- But not *necessarily* a bad thing: A strengthening of the monetary transmission mechanism

A different concern: Does the high debt level *in itself* have a dampening effect on consumption during times of financial unrest (i.e. even if interest rates stay unchanged)?

Aggregate household debt, home equity and LTV ratio



Household leverage and consumption

Many adverse effects of the financial crisis for households, including:

- Steep drops in asset prices (including house prices)
- Tighter credit standards
- Negative shocks to current and expected future income
- Greater uncertainty about future financial situation

Two reasons to expect a larger impact on consumption for highly leveraged families:

1. Greater risk of binding credit constraints
2. Precautionary saving motive to bring down debt and deleverage

What can we learn from micro data?

Data issues:

- Challenge: No microdata on consumption
- But high-quality data on disposable income, assets and liabilities.
- Can construct a imputed measure of consumption:

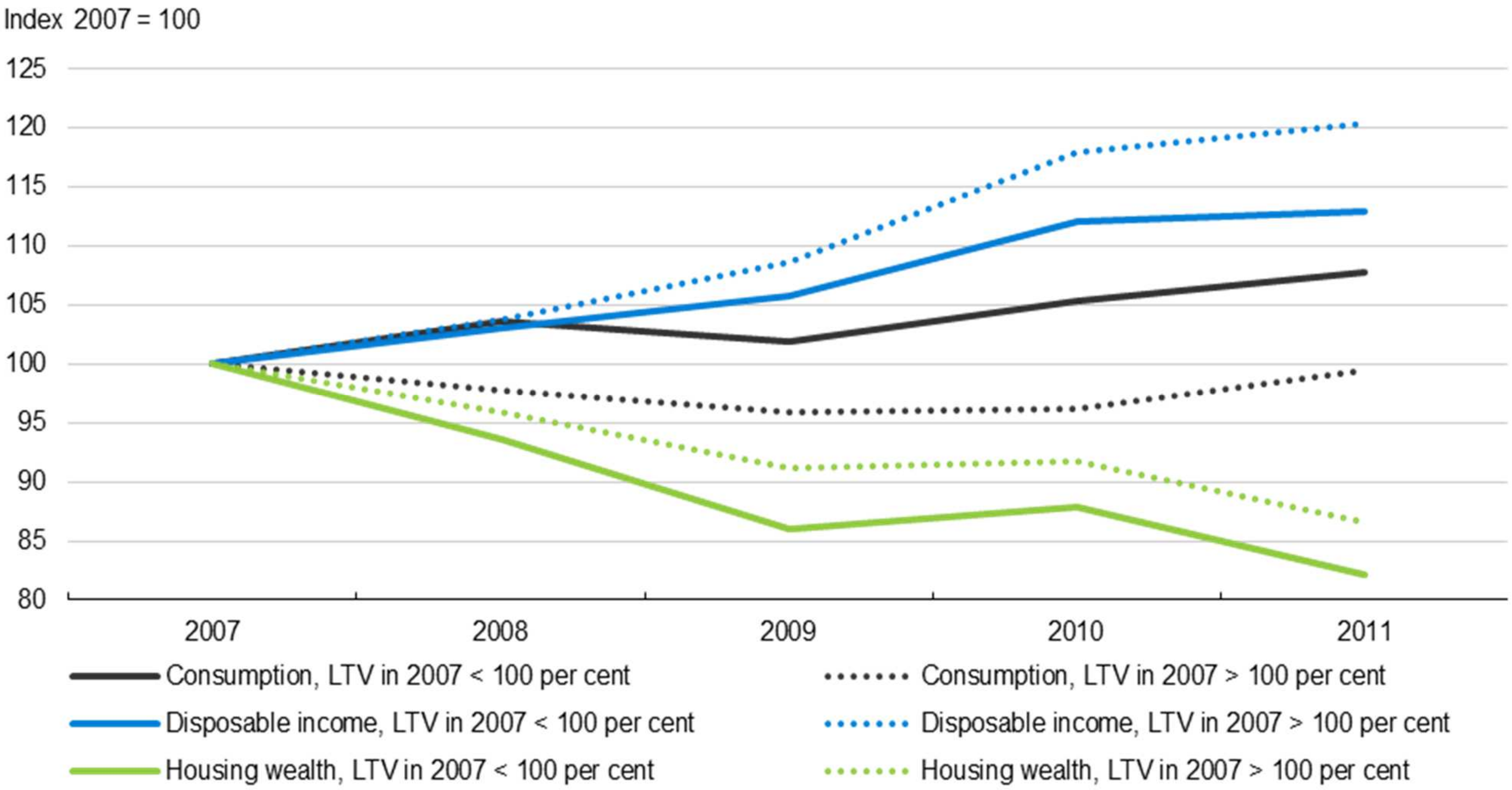
$$C = Y^d - \Delta NW$$

- Construct LTV ratio for each home owner family:

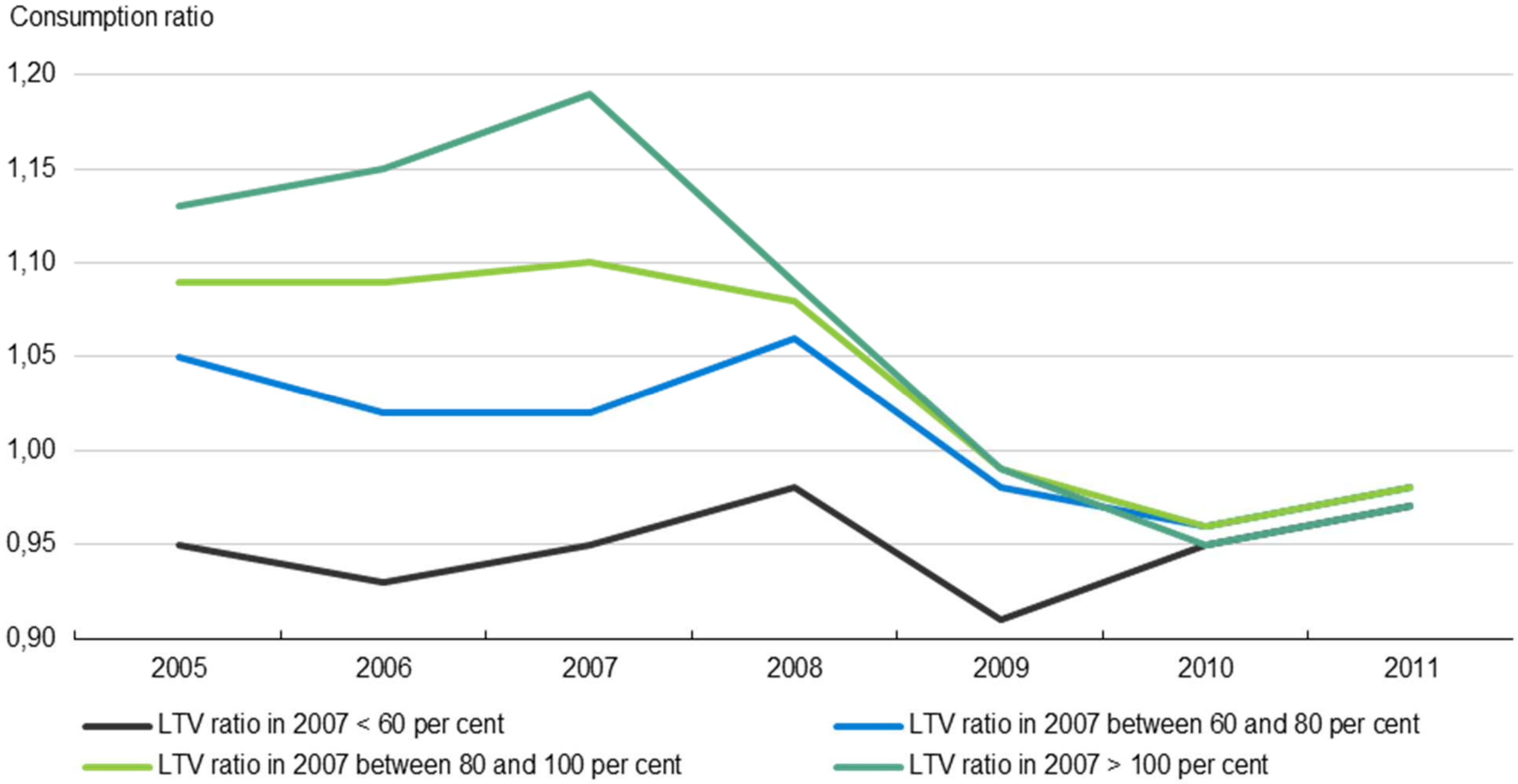
$$LTV = \text{total debt} / \text{ value of home(s)} * 100$$

How does LTV ratio in 2007 correlate with subsequent development in consumption?

A quick look at the data: High LTV families vs. other home owners



An alternative illustration



Conclusions

Financial stability:

- The high debt level among Danish households does not pose a direct threat to the stability of the Danish mortgage credit sector.
- Debt concentrated among families with high ability to pay
- Danish families' willingness and ability to service mortgage loans are resilient to even very large adverse shocks

Macroeconomic stability:

- Household finances sensitive to interest rate fluctuations
- Strong correlation between high pre-crisis LTV ratios and drop in consumption during the financial crisis.
- Suggests a destabilizing effect of high indebtedness during times of financial unrest.
- Financial stability may be affected indirectly through corporate sector.