The lending regulation and households' financial position in Norway

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Background

Norway introduced borrower-based macroprudential regulation in 2010

- LTV since 2010
- DTI since 2010/2017
- Amortization requirements since 2011
- Interest resilience since 2011

Today: "Utlånsforskriften" - the lending regulation

Motivation: Fear of demand-side multiplier effects - higher debt burdens could make negative shocks propagate through collapsing demand

- Why? Experience from the late 80s/early 90s: banking crisis induced by demand side collapse (my interpretation) - *"Aggregate demand externalities"*

“Utlånsforskriften” - The lending regulation of today

	Mortgages	Consumer loans	Other loans
Max LTV installment loan	85 pct		
Max LTV HELOC	60 pct		
Amortization req	If LTV$>$ 60	All	
Max DTI	500		
Interest resilience	$\max\{7\%, i_t + 3\%\}$		
Flexibility quota	10%	5%	10%

Table 1: Constraints in the lending regulation of 2023

Road map

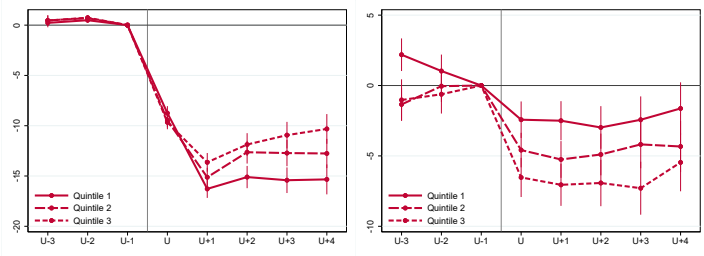
1. Debt and MPCs - what do studies say?
2. LTV and DTI regulation in Norway - 2 event studies
3. **Amortization requirements and the inflation tilt effect**
4. An underappreciated fact about dynamics of household indebtedness

Does debt matter for MPCs? Evidence from job loss

Fagereng, Onshuus and Torstensen (2023): MPCs after job loss increase with indebtedness

- Debt-to-income ↑ from 0.8 to 3.2 → MPC ↑ from 1/6 to 1/2
- ... but note: income responds *less* when DTI is high (as in Kabbas and Roszbach, 2022)

(ii) By DTI



(e) After-tax labor income **(f)** Consumption expenditure

Does debt matter for MPCs? Alternative estimates

Fagereng, Onshuus, Torstensen (2023): **Consumption after job-loss**

- MPCs increase with debt-to-income
  - Also when controlling for liquidity
- NB! Matched control group, only negative shocks

Fagereng, Holm, Natvik (2021): **Consumption after lottery wins**

- MPCs vary with liquidity and age, not debt
- NB! Clean identification, only positive shocks

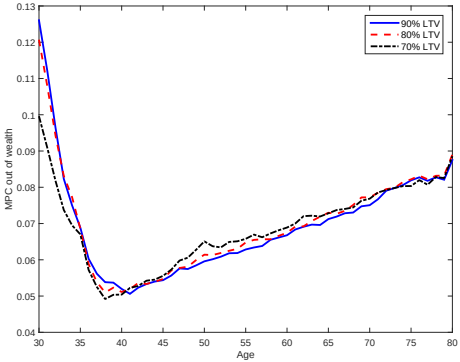
Fagereng, Natvik, Yao (2015): **Consumption-wealth co-movement**

- Co-movement between wealth and consumption increases with household leverage
- NB! Simply descriptive evidence with controls, both positive and negative shocks

Policy experiment in a structural model - tighter LTV

Fagereng, Natvik, Yao (2015): A model consistent with micro-estimates of how leverage is correlated with the wealth-consumption comovement

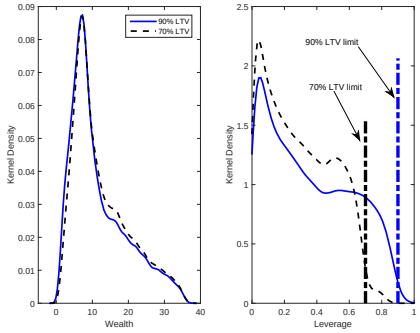
- Permanently lower LTV-limit does little to reduce MPC out of income shocks:



Policy experiment in a structural model - tighter LTV

Fagereng, Natvik, Yao (2015): Why is LTV-regulation blunt?

- Yes, LTV-regulation lowers indebtedness
- ... but the indebtedness that triggers high MPC falls too
- See also Karlmann, Kinnerud, Kragh-Sørensen (2023).



Debt and MPCs - the potential housing channel

A lower leverage ratio mechanically reduces households' wealth-exposure to house prices

$$EI_{Q_h} W = \frac{Q_h H}{W} = \frac{1}{1 - ltv}$$

- To the extent that housing wealth affects consumption, there likely exists demand side multiplier effects here
- We know little of their magnitude in Norway

The Norwegian LTV and DTI introductions - 2 event studies

Aastveit, Juelsrud and Getz Wold (2022): *The leverage-liquidity trade-off of mortgage regulation*

- Event study of the introduction of LTV-constraints ... and consumption thereafter
- **Main finding:** LTV rules reduce debt, but also reduces household liquidity
  - Total effect on consumption volatility ambiguous!
  - Back-of-the-envelope: C-volatility up.

Fjære-Lindkjenn (2023): *Limiting debt to income: Household adaptation and avoidance*

- Event study of the introduction of DTI-constraints
- **Main finding:** DTI rules don't affect DTI
  - Sharp contrast to the FSA's Lender Survey where banks report bunching and few above thresholds

Amortization requirements

The "Lending regulation": If $LTV > 60pct$, the household must amortize 2.5% or the prescription of a 30-year annuity loan contract.

- Also monthly principal on consumer credit - to be repaid in full within 5 years

Some flexibility:

"... obliges lenders to require principal payments for mortgages with an LTV ratio exceeding 60 percent. ... *The lending regulation permits installment and interest deferral for existing loans to customers whose ability to pay has been temporarily impaired.*"

Amortization requirements

... or maybe not flexible at all?

"**Refinancing**: The lending regulation does not prevent the refinancing of an existing mortgage or consumer loan in the same bank, or moving the loan between banks. For mortgages it is required that the new loan:

- does not exceed the size of the existing loan,
- has the same property as collateral, or a lower LTV ratio than the existing loan,
- has a duration which does not exceed the remaining duration of the existing loan, and
- has the same or stricter requirements for principal payments."

..and similar for consumer loans.

Amortization requirements and the tilt effect of inflation

Fisher effect: Inflation eats your mortgage

Adjustable-rate mortgage: If monetary policy is approximately ok, $di/d\pi > 0$.

Tilt-effect of inflation: The real value of your debt shrinks faster when inflation goes up

- ... but not a free lunch under ARM - your interest increases too!

Upshot: Because amortization requirement is *nominal*, the implied saving requirement is locked to inflation

- **The rules suffer from nominal illusion**

Amortization and inflation tilt: Example w. constant real wage and real rate

A person with income NOK 600.000, mortgage NOK 3.000.000, 25 yr schedule

- Case 1: inflation 0%, nominal interest 1% (real rate 1%)
  - **Debt payment: NOK 136.000kr $\Rightarrow$ Share of wage: 23%**
  - Amortization: NOK 106.000
  - DTI: 4,82
  - Real debt: 3.000.000 - 106.000 = **NOK 2.894.000**

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- Case 2: inflation 5%, nominal interest 6%, (real rate 1%)
  - **Debt payment: 232.000 kr ⇒ Share of wage: 37%**
  - Amortization: NOK 53.000
  - DTI: 4,68
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To maintain DTI=4.82 and real debt (2.894.000), loan must *increase* to **3.039.000 kr**

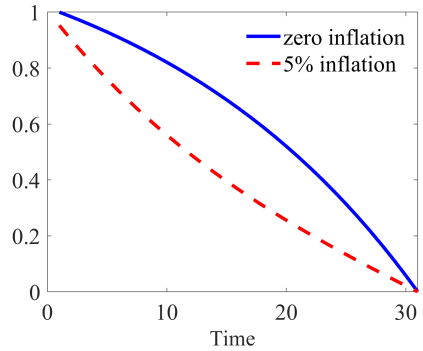
"Remember, the annuity loan contract proides a big adjustment for inflation"

No! 1: It is the nominal rate that makes annuity loan contracts adjust, not inflation

No! 2: The amortization will never be negative

When inflation and nom. rate increase 1:1, the real repayments increase a lot:

Real mortgage balance

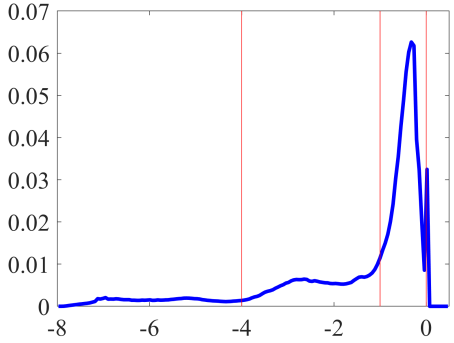


Tilt effect of inflation in a model

Ellingsrud, Kinnerud and Natvik (2023): Welfare effects of inflation when households hold ARMs in a model calibrated to Norway

Model experiment: inflation ↑ 5%, constant real rate and real wage

Distribution of welfare effects (share of initial resources (%))



Tilt effect on inflation in a model

Ellingsrud, Kinnerud and Natvik (2023)

What characterizes the households who lose when inflation rises?

	Group 1	Group 2	Group 3	Group 4
Welfare loss	NOK 38.900	NOK 25.400 kr	NOK 12.000	NOK 0
Age	30	35	60	76
Wealth at age 25-27	NOK 60.000	NOK 780.000	NOK 780.000	NOK 480.000
DTI	4.4	3.1	1.5	3.5
LTV	0.80	0.61	0.18	0.37
Population share	0.09	0.28	0.59	0.03

Amortization requirements and inflation tilt effects - big deal or not?

Norway 2023: Wages, house prices and interest rates have increased less than inflation

- **Sticky wages** - amortization rquirement forces people to save exactly when their income is temporarily low
  - Additional cost of amortization requirements!

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Nominal amortization requirements are likely to give solvent households liquidity problems from inflation - without any solid economic rationale

Amortization and nominal illusion - it's here and it hurts

https://www.nrk.no/innlandet/familien-tron-kampen-i-brumunddal-er-lettet-over-at-renten-ble-holdt-fast-i-dag-1.16619597

Lever på den økonomiske smertegrensen: – Det er helt svart

Familien Tron Kampen i Brumunddal er glade for at renten ikke steg i dag, men holder pusten for rentehopp i desember.

BEKYMRET FOR ØKONOMIEN: Linn Margrethe og Tore Tron Kampen har to barn, en baby på tre måneder og en datter i barnehagealder. De prøver å skjerme barna for sine bekymringer.

FOTO: ALEXANDER NORDBY / NRK

Ekteparet har snakket om å selge huset, men er bekymret for boligmarkedet. Nå ser Tron Kampen seg nødt til å kontakte banken og be om avdragsfritak.

– Vi må bare gjøre det nå. Vi har vært litt for stolte, men vi må ta kontakt med banken nå, sier han.

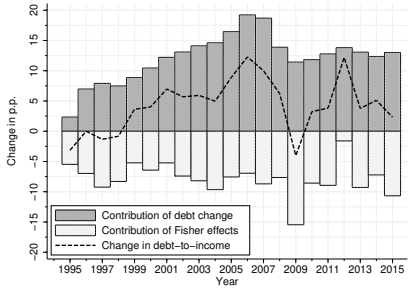
Han har det ikke bra slik situasjonen er nå.

Underappreciated fact: Fisher effects important for DTI dynamics

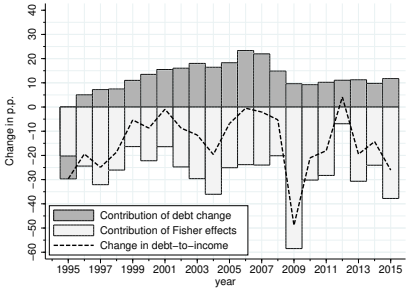
Fagereng, Gulbrandsen, Holm, Natvik (2023): *"Fisher effects, monetary policy and household indebtedness"*

- Movements in debt-to-income ratios over time are partly driven by the denominator - in particular among the highly leveraged!

Mean



High DTI



Conclusions from Norway

1. **Mixed evidence on the debt-demand multiplier motivating BBM**
   - MPC effects from zero to sizeable per increase in debt-to-income
   - Underappreciated point from models: Tighter constraints reduce indebtedness, but also reduce the debt-burden that causes high MPC
   - Main effect unlikely to be higher MPC from income, but bigger wealth exposure to house prices - $LTV \uparrow \Rightarrow El_{q_h} W \uparrow$
2. **Introduction of LTV constraint in Norway reduced not just borrowing, but liquidity too**
3. **Amortization requirements in Norway suffer from nominal illusion**

Conclusions from Norway

1. **Mixed evidence on the debt-demand multiplier motivating BBM**
2. **Introduction of LTV constraint in Norway reduced not just borrowing, but liquidity too**
   - Increased exposure to *income* shocks after house purchases
   - Trade-off between reducing exposure to house prices and exposure to income
3. **Amortization requirements in Norway suffer from nominal illusion**

Conclusions from Norway

1. **Mixed evidence on the debt-demand multiplier motivating BBM**
2. **Introduction of LTV constraint in Norway reduced not just borrowing, but liquidity too**
3. **Amortization requirements in Norway suffer from nominal illusion**
   - Real saving requirement tied to inflation
   - Negative welfare effects concentrated among the young with low starting wealth
     - ... in sharp conflict with other redistributive policies in Norway
   - Disturbing open questions
     - Exactly what friction does the amortization requirement solve?
     - Why nominal and not real?

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