LESSONS LEARNED FROM USING BORROWER BASED MACROPRUDENTIAL TOOLS. THE NORWEGIAN CASE

BRUNEL UNIVERSITY 28.6.2019

KJERSTI-GRO LINDQUIST

NORGES BANK

The plan for my talk

Borrower Based Regulation of Banks' Mortgage Loans

- Introduction
  - The motivation for and implementation of BBMs
- Assessing the effects of the BBMs
  - Benefits
  - Costs

INTRODUCTION

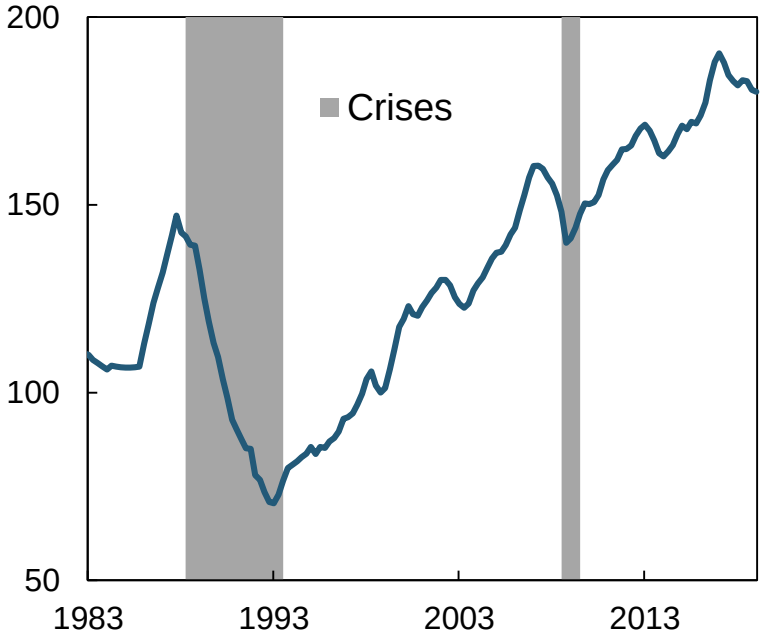
Motivation for BBMs

- A response to high growth in house prices and debt
- Prevent an increase in household vulnerability
- Prevent the building up of systemic risks

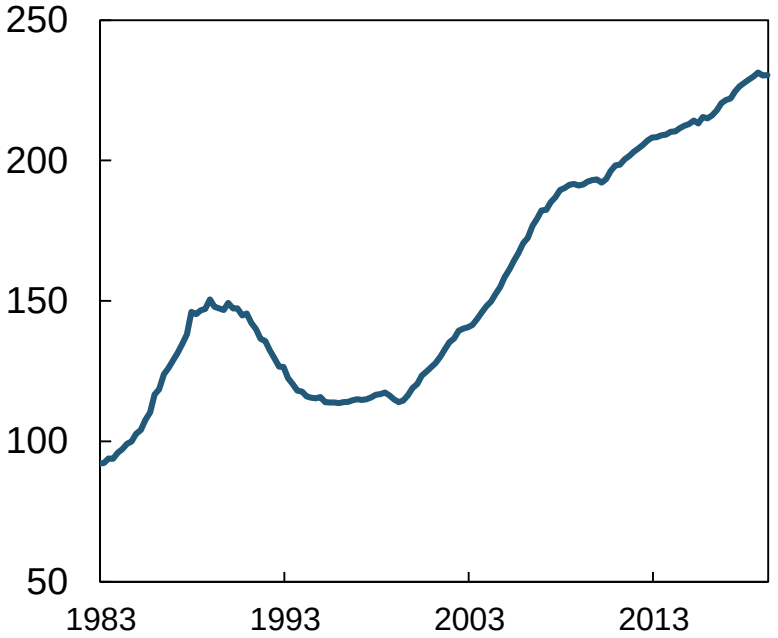
House prices and household debt as a percentage of disposable income

1983Q1 – 2019Q1

House prices



Debt



Sources: Eiendomsverdi, Finn.no, Norwegian Association of Real Estate Agents (NEF), Real Estate Norway, Statistics Norway and Norges Bank

Borrower-based regulation

Requirement	June 2015	Jan 2017 and current
Max. loan to value (LTV)	85%	85%
Debt-servicing		
• Interest rate increase of	5 p.p.	5 p.p.
• Compulsory principal payment	For LTVs > 70%	For LTVs > 60%
• Max. debt to income (DTI)		5 x pre-tax earnings
Regional requirements		Max. LTV 60% for secondary dwellings in Oslo
Speed limit (flexibility quota)	10%	10% 8% in Oslo

ASSESSING THE EFFECTS OF IMPLEMENTED BBMs

We focus on

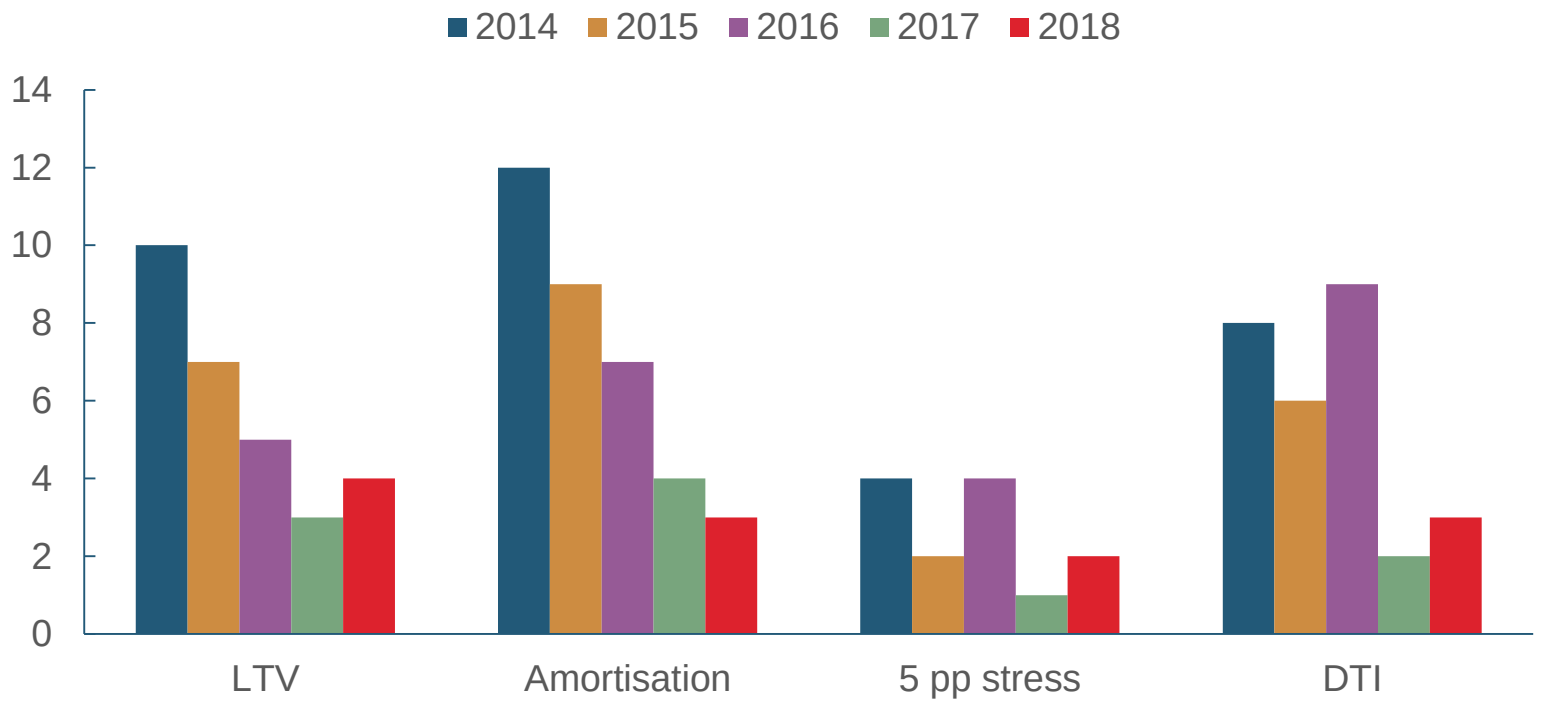
- Credit growth in vulnerable households

- Effect on house prices and aggregate credit growth
  - Significant effects
  - Time structure of the effect

- Distributional consequences
  - First-time buyers

Mortgage requirements have had an effect

Percentage of new instalment loans in breach of requirement



Sources: Norwegian FSA's annual mortgage survey

International analyses of BBMs

The effect on growth in house prices (ΔP^h) and credit (ΔC)

- A growing number of papers is estimating the effect of BBMs using panel data including a large number of countries
- The results are ambiguous

	Reduce ΔP^h		Reduce ΔC	
	Short run	Long run	Short run	Long run
Carreras et al. (2018) JFS	DTI, LTV	DTI, LTV		DTI
Nymoen et al. (2019) IJFS	LTV		LTV, (DTI)	(DTI)

- Important with additional analyses!

Analyses at Norges Bank using micro data

Growth in house prices and credit

- Tax returns data on all Norwegian households 2004-2017
- Data on all housing transitions in the market
  - Price, address, buyer
- House prices in 57 geographical regions

The effect of DTI on house price growth

New requirement in 2017

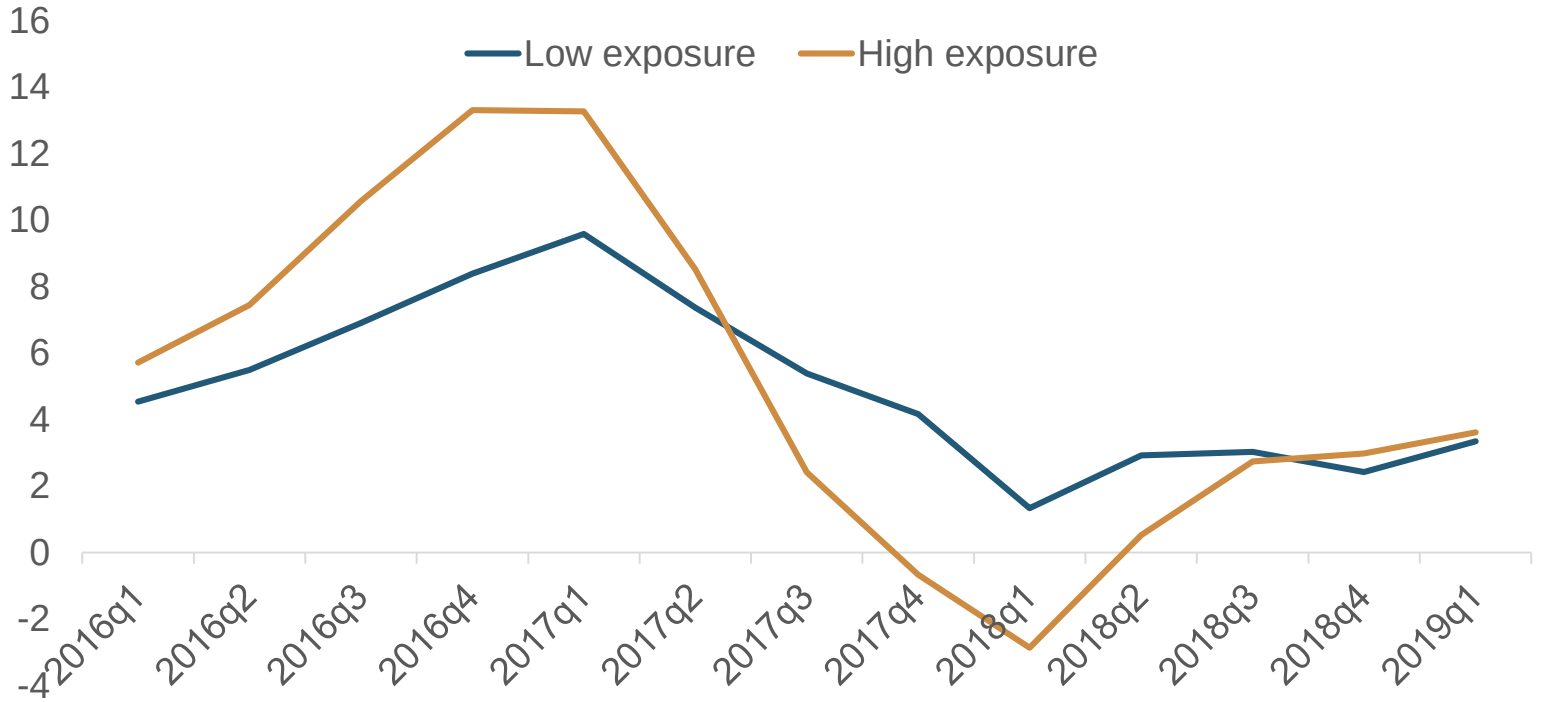
- *Hypothesis:* The DTI limit has a higher impact on house price growth in areas with a high share of homebuyers with a high DTI (high exposure areas).

- Norway is devided into 57 areas. The share of homebuyers in 2014 with a DTI>5 is calculated. The speed limit is subtracted from the share. If this adjusted share is positive (zero or negative), the area is defined as being a «high exposure» («low exposure») area.

This is an update of Borchgrevink, H. and K.N. Torstensen, Economic Commentaries 1/2018, Norges Bank.

House price growth in areas with high and low exposure to the DTI requirement

Four quarter growth. Percent. 2016 Q1 – 2019 Q1



Estimating the effect of high exposure

(1) $\Delta_j P_i^h = \alpha EXSP_i + X_i'\beta_1 + \beta_0 + \epsilon_i$

$\Delta_j P_i^h$ is the j quarter growth in house prices in region i

$EXSP_i$ is a dummy variable. Equals 1 if the region is classified as a high exposure area

X_i is a vector of controls (four quarter change in unemployment and housing supply)

Fixed effects: Large cities, Smaller cities

Regression results

	2016q4 – 2017q4				2016q4-2019q1		2018q1-2019q1	
	I	II	III[1]	IV	V	VI	VII	VIII
$EXSP$=1	-4.8***	-2.0*	-1.8*	-2.1*	-4,9***	-3.2**	0.3	-0.7
$\Delta_{10-16}P^h$				-0.02				
X	No	Yes	Yes	Yes	No	Yes	No	Yes
City dummies	No	Yes	Yes	Yes	No	Yes	No	Yes
N	57	57	42	57	57	57	57	57
Adj. R^2	0.16	0.57	0.19	0.56	0.20	0.38	-0.0	0.13

1) Without Oslo.
*, **, *** indicate significance at 10, 5 and 1 percent level.

Estimating the effect of high exposure

With time fixed effects

(2) $\Delta_4 P_{it}^h = \alpha_1 EXSP_i + \boldsymbol{\alpha_{2t}\tau_t} + \boldsymbol{\alpha_{3t}EXSP_i \cdot \tau_t} + X'_{it}\beta_1 + \beta_0 + \epsilon_i$

$\Delta_4 P_i^h$ is the four quarter growth in house prices in region i

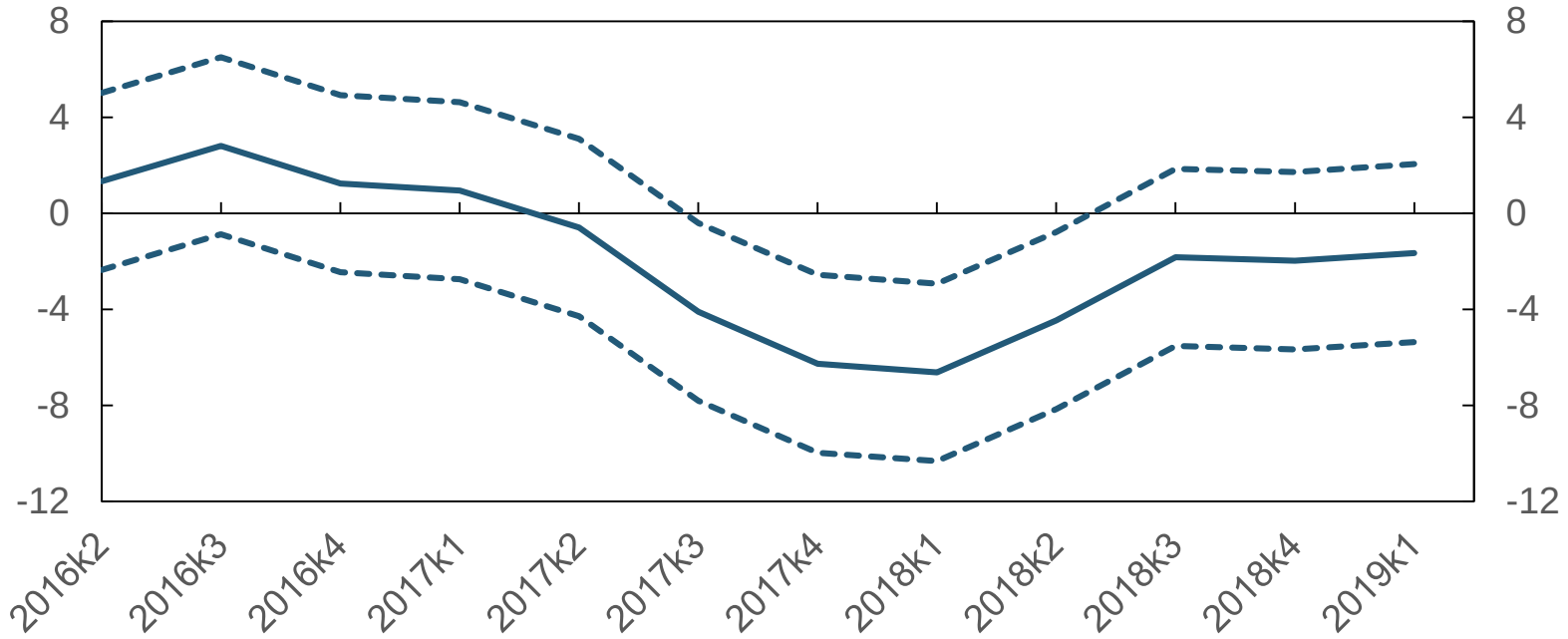
$EXSP_i$ is a dummy variable. Equals 1 if the region is classified as a high exposure area

X_i is a vector of controls (four quarter change in unemployment and housing supply)

τ_t is a time dummy for each quarter

Time-varying effect on the four quarter house price growth of high exposure[1]

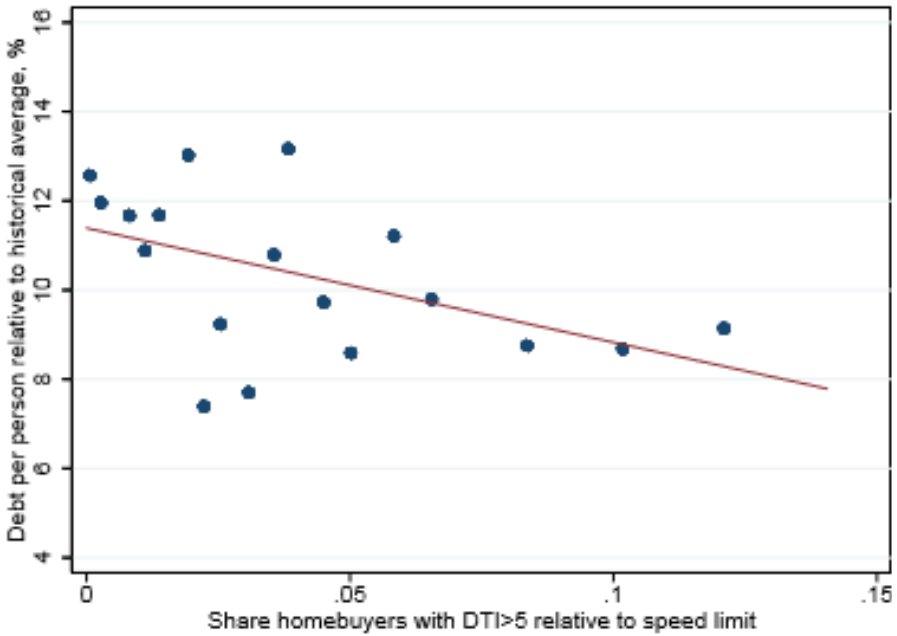
Percent. 2016q2 – 2019q1



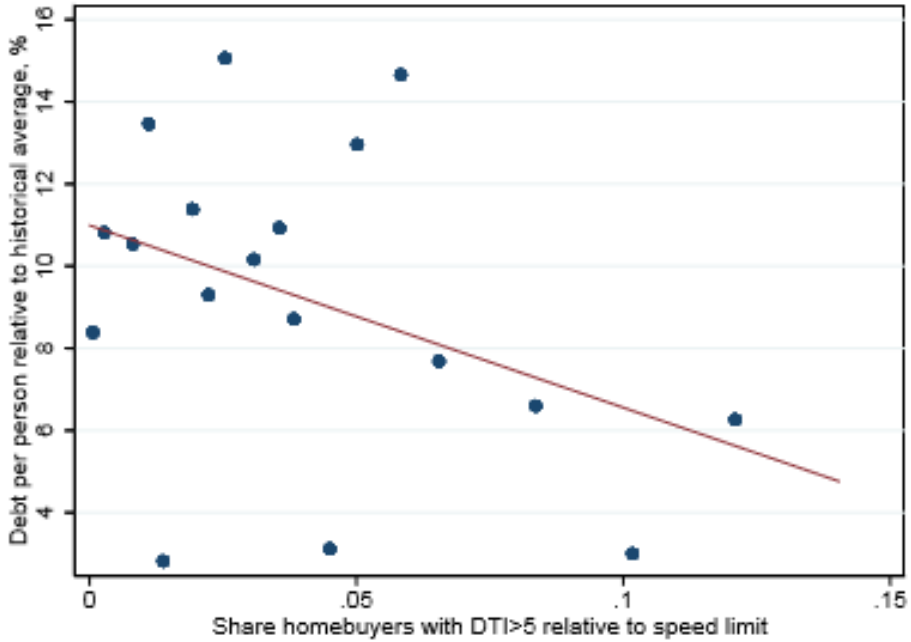
1) Dotted lines show plus/minus two times the standard deviation.
Sources: Ambita, Eiendom Norge, Eiendomsverdi, Finn.no, Statistisk sentralbyrå and Norges Bank

Exposure and growth in debt per person[1] in high exposure areas. Percent. 2017

All



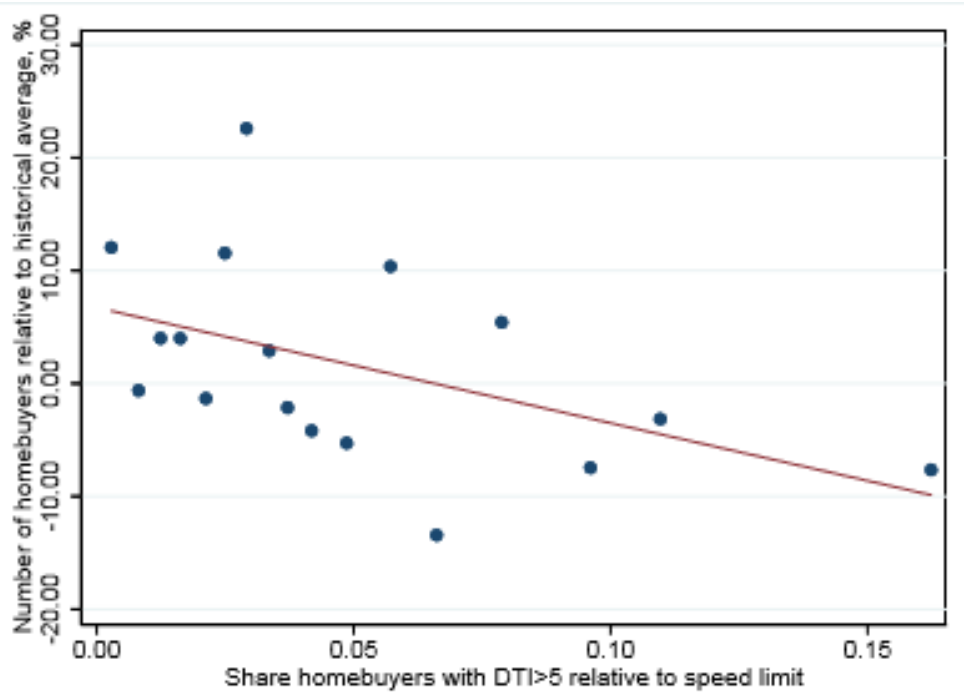
Homebuyers



1) 2017 debt per person compared with average debt per preson of 2014-2016.

Reference: Borchgrevink and Torstensen, Economic Commentaries 1/2018. Norges Bank

Exposure and number of home buyers[1]. High exposure areas. Percent. 2017



1) Number of homebuyers in 2017 relative to the average of 2010-2016.

Reference: Borchgrevink and Torstensen, Ecoomic Commentaries 1/2018. Norges Bank

To summarize

Our analysis shows that

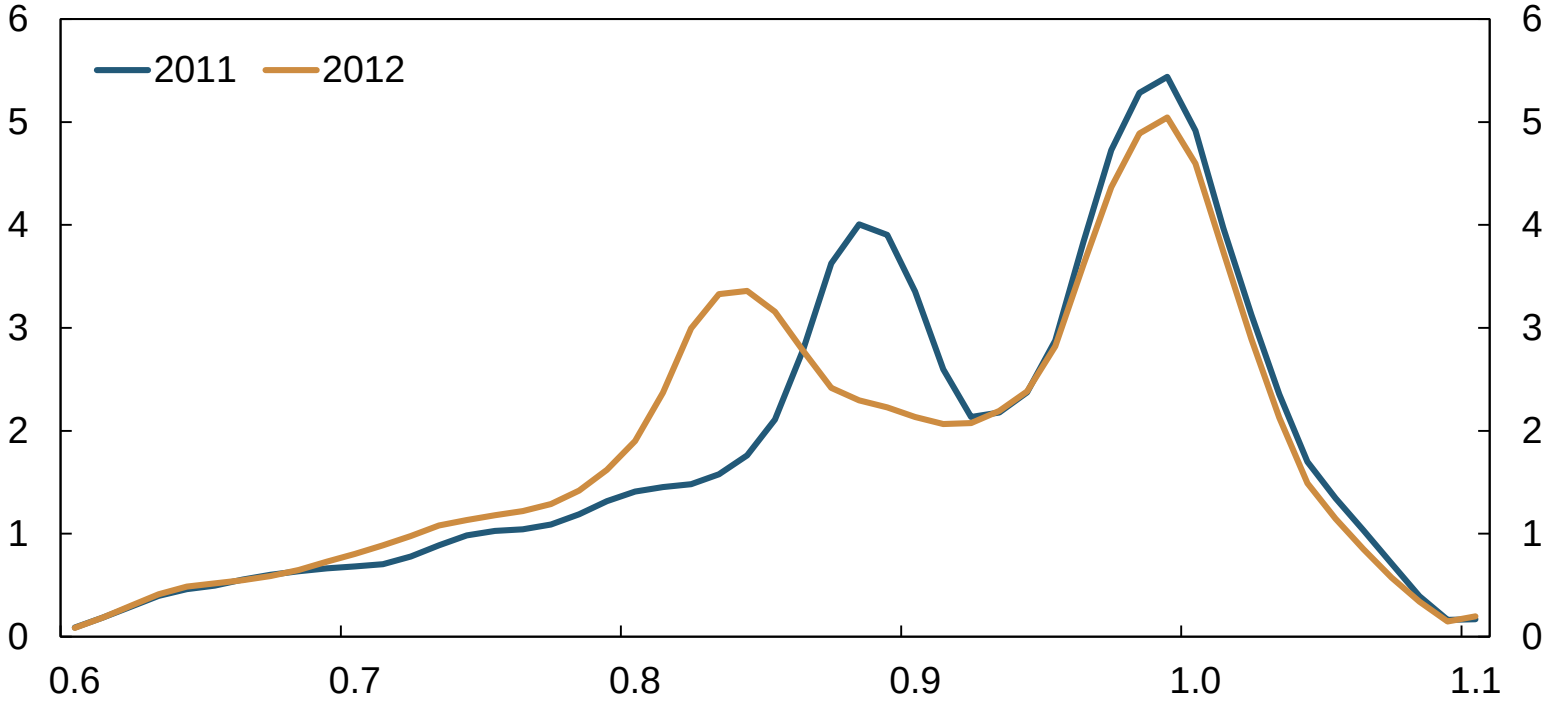
- BBMs reduce the number of vulnerable household
- The DTI limit reduces growth in house prices and credit in the medium term – at least in high exposure areas relative to low exposure areas
- The negative effect on house price growth lasts 1½ year. The level effect is stille present after 2 years

THANK YOU!

EXTRA

The distribution of LTV among first-time buyers 18-39 years shifted in 2012

The guideline changed from 0.9 to 0.85 December 2011



Sources: Ambita, Kartverket, Statistics Norway and Norges Bank

First-time buyers

Age 21-31

- We analyse
  - if parental support is important for children's first home investment
  - if parental support has become increasingly important over time.
- Estimate the probability of young persons buying their first home

Main findings

- We find significant positive effects on children' probability of buying their first home from
  - Parental financial and collateral wealth
  - Inter vivos gifts
  - **Own income and financial wealth**
- Over time, the importance of parental support has increased

2 The model

Logit estimation. The probability to buy the first home

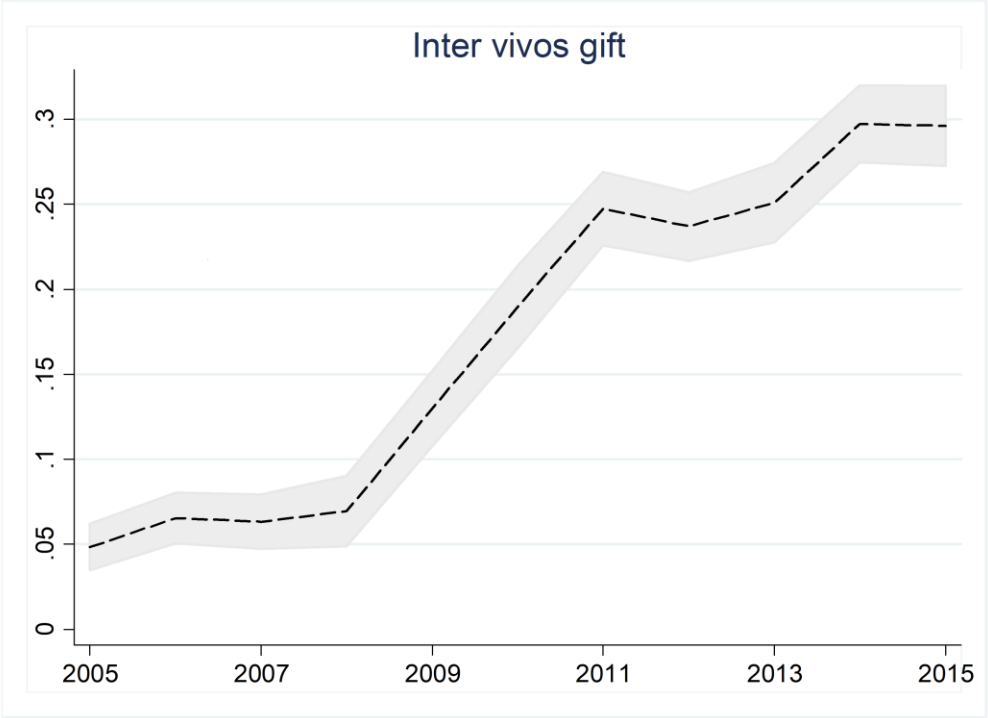
$$\Pr[\Delta H_{it} = 1] = \frac{1}{\exp\left\{-\left(\alpha + \beta \ln Y_{it}^{p} + \gamma \ln W_{i,t-1}^{p} + \varphi X_{it} + extensions\right)\right\} - 1}$$

$$extensions = \delta \ln Y_{it}^{k} + \vartheta \ln W_{i,t-1}^{k} + \tau \ln WH_{i,t-1}^{p} + \theta T_{it}$$

$\Delta H_{it} = 1$ if individual i buys its first home in period t;
Y =income; W = financial wealth; WH = housing wealth;
T = dummy for inter vivos gift; p =parents; k =child;
X_{it} = (age, gender, marital status, own children, big city, siblings, student, time dummies)

Average marginal effect on the propensity to buy from receiving inter vivos gift

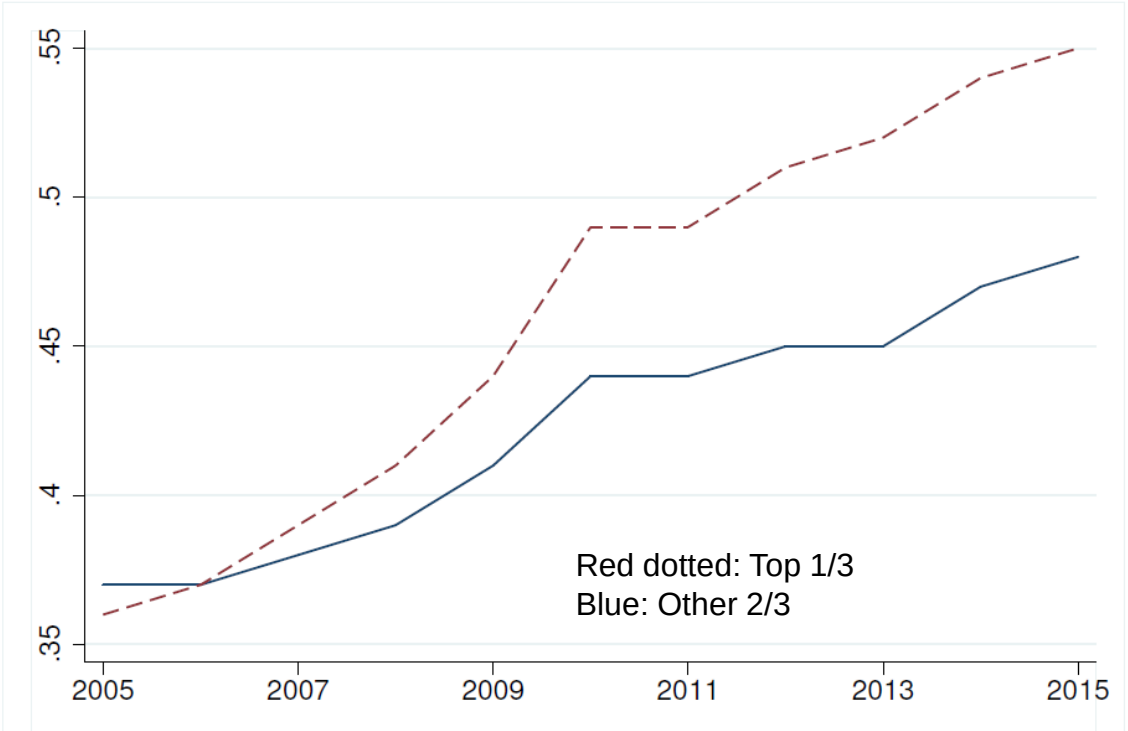
Age 21-31 years



From Halvorsen and Lindquist (2017), Working paper 19, Norges Bank
Data source: Statistics Norway

Mean ownership-rate difference across parental wealth position groups increases

Share. Young 21-31 years



From Halvorsen and Lindquist (2017), Working paper 19, Norges Bank
Data source: Statistics Norway

The macroprudential institutions