

# Policy uncertainty and precautionary saving:

Does a possible reduction of the mortgage interest deduction increase saving in the Netherlands?

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## Main message

- ▶ Second order effects of a MID reform can be substantial.
- ▶ Policy makers are scared by first order effects, and they should.
  - ▶ consumption contributes negatively to growth.
- ▶ But these may be partly offset by the reduction in second order effect stemming from a credible reform.

## Motivation

- ▶ The financial crisis makes clear that households face considerable house price risk.
- ▶ This might induce precautionary saving behavior (Carroll and Kimball, 2008, Banks et al. 2010).
  - ▶ Increase the 'buffer stock' of financial assets.
  - ▶ Additional mortgage payments.

## Possible 'other' explanations which induce saving behavior

- ▶ Pension reform, budget cuts, mortgage tax relief (MID)
- ▶ Research questions:
  - ▶ Is consumption growth undermined by the uncertainty around the reform of the MID?
  - ▶ Is it possible to separately identify the effect of this type of policy uncertainty?
- ▶ Method
  - ▶ Ideally: experimental settings ...
  - ▶ Here: use hypothetical questions at strategic moments in the reform process.
- ▶ Aim: isolate the effect of policy uncertainty on saving.

## Why should we expect a link between policy-related uncertainty and the actual value of a house?

- ▶ MID Reform results in lower disposable income and capacity to purchase a house.
  - ▶ This leads to falling house prices and housing-market stagnation.
- ▶ Changes in housing wealth affect future income if people are planning to annuitize housing wealth later on in life.
- ▶ Respondents are more familiar with house prices than tax rules.

## Literature

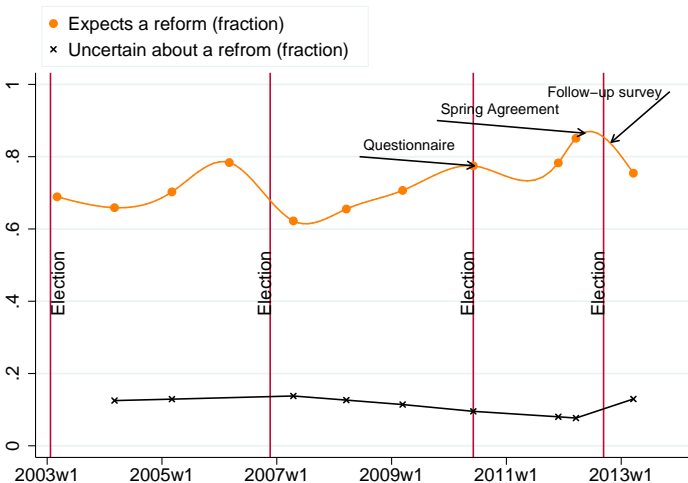
- ▶ Policy uncertainty (Baker et al 2013; Luttmer and Samwick 2012; Giavazzi and McMahon, 2012).
- ▶ Effect of income uncertainty on precautionary accumulation (Carroll and Samwick 1998, Guiso et al 1992, Lusardi 1997, Caballero 1991)
- ▶ Deduction of mortgage interest (Glaeser and Shapiro 2003)
- ▶ Subjective expectations on future house values (Niu and Van Soest, 2014)

## MID: rebates and wealth effects



- ▶ Rob earns 100000 euro and has marginal tax rate of 52%.
- ▶ Rob bought a middleclass house for 350.000 euro (70 m<sup>2</sup> on a canal in Amsterdam)
- ▶ Rob pays EUR18000 mortgage interest a year
- ▶ Rob receives about EUR800 per month back . . . almost as high as social assistance benefit.

# Do you expect a limitation of the mortgage deductibility in the next 10 years?





## Questionnaire on housing price uncertainty

- ▶ CentERpanel; weekend of June 18, 2010.
- ▶ 1003 households; response rate: 67 %.
- ▶ Merge with the 2010 DNB household survey.
  - ▶ Active saving: whether or not the household has saved in the past year and if yes how much (reported in brackets).
  - ▶ Negative saving: *“Would you say the expenditures of your household were higher than the income of the household, about equal to the income of the household, or lower than the income of the household?”*
  - ▶ Impute the amount of negative active saving using the difference in financial wealth.
  - ▶ Permanent income (Kapteyn, Alessie and Lusardi, 2005).

## Summary statistics (N=410)

	Mean	Std. Dev.
Saving rate (active saving to permanent income)	0.121	0.190
No. of children	0.561	0.993
Married	0.705	0.457
Self employed	0.041	0.20
Homeowner	0.841	0.366
Higher educated	0.529	0.50
Improved econ. situation	0.188	0.391
Income uncertainty	0.045	0.075
Y < €1,150	0.037	0.188
€1,151 < Y < €1,800	0.166	0.372
€1,801 < Y < €2,260	0.256	0.437
Y > €2,260	0.541	0.499
Age 20-34	0.083	0.276
Age 35-44	0.159	0.366
Age 45-54	0.198	0.399
Age 55-64	0.305	0.461
Age 65+	0.256	0.437
$\Delta IQR$	0.382	4.125

Notes: N=410.

## Policy neutral (no-reform) scenario

Expectations regarding the value of their own property:

*Suppose that the government decides not to change the tax treatment of owner-occupied housing. This implies that the mortgage interest deduction remains unaltered. What is the change out of 100 that the value of your property will (increase/decrease) between  $y_k$  % and  $y_{k+1}$  % in total in the next two years?*

The intervals are respectively:

$(-\infty, -15]$ ,  $(-15, -5]$ ,  $(-5, 5]$ ,  $(5, 15]$ ,  $[15, \infty)$ .

## Hypothetical and simplified reform scenario

- ▶ Three randomized groups
  - ▶ Hold for new and existing mortgages.
1. The maximum rate at which the mortgage interest can be deducted will gradually reduce from 52% to 30%
  2. The maximum amount over which mortgage interest can be deducted will gradually be reduced from € 500,000 to € 250,000. Interest on loans above € 250,000 will then no longer be tax-deductible.
  3. The primary residence and the mortgage will receive the same fiscal treatment as taxable wealth.

## Hypothetical and simplified reform scenario

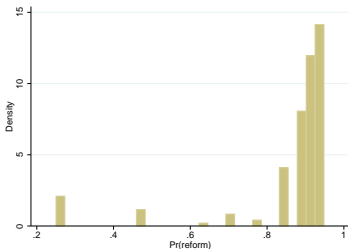
We ask the homeowners again about expectations regarding the value of their own property—assuming that one of the hypothetical scenarios will be implemented.

- ▶ A considerable fraction of the respondents state that they are “unsure” about future price movements.
- ▶ About (37%) in the no-reform scenario and (48%) in the reform scenario.
- ▶ These households are excluded from the empirical analysis.
- ▶ This group of ‘unsure’ respondents does not differ in observable characteristics from the group who answers the subjective probability questions.

## Measuring house price uncertainty (1)

- ▶ State of nature is reform ( $R=1$ ) or non-reform ( $R=0$ ).
- ▶  $\Pr(R = 1)$  is the likelihood that the government will reduce the mortgage interest deduction.
- ▶ We elicit this from the timing questions by estimating a probit model.
- ▶ Dependent variable: dummy whether or not the respondent expects a limitation of the MID in the foreseeable future.

Distribution of the  $\Pr(R = 1)$ , head of the household (N=410)



## Measuring house price uncertainty (2)

- ▶ Denote the reported probabilities as  $p_{ik}^r$ ,  $k = 1, \dots, 5$ , where  $p_{ik}^r = p(y_k \leq Y_i \leq y_{k+1} | R = r)$ , with  $r = \{0, 1\}$ .
- ▶ The respondents 'subjective' cdf is

$$F_{ik}^r(y_k) = P_i^r(Y \leq y_k | R = r) \equiv \sum_{l=1}^k p_{il}^r.$$

- ▶ Fit log normal cumulative distribution using NLLS (Dominits and Manski, 1997) and cubic spline function (Bellemare et al., 2012).
- ▶ Compute the **expected value** and **variability** (IQR) of subjective house price movements **for both scenarios**.
- ▶ Derive the unconditional variance or the **'aggregate' uncertainty**.

Average **expected value** of subjective future house price movement in pp. (head of the household)—derived using splines

	Group 1	Group 2	Group 3	All	F-test (p-value)
<b>Expected value</b>					$H_0 : \mu_1 = \mu_2 = \mu_3$
No-reform scenario (next two years)	0.42 (5.88)	0.41 (6.41)	0.18 (5.33)	0.33 (5.86)	0.92
Reform scenario (next two years)	-2.33 (6.24)	-1.11 (6.13)	-2.25 (6.66)	-1.92 (6.37)	0.16
Reform scenario (next ten years)	0.00 (8.68)	1.41 (8.43)	0.35 (9.18)	0.55 (8.79)	0.37
F-test. $H_0 : \mu_{\text{no-reform}} = \mu_{\text{reform}}$ :					
			next two years (p-value)	0.00	
			next ten years (p-value)	0.00	
Observations	162	154	171	487	



## Average **IQR** of subjective future house price movement in pp. (head of the household)—derived using splines

	Group 1	Group 2	Group 3	All	F-test (p-value)
<b>Interquartile range (IQR)</b>					$H_0 :$ IQR <sub>1</sub> = IQR <sub>2</sub> = IQR <sub>3</sub>
No-reform scenario (next two years)	9.19 (5.40)	9.84 (6.09)	8.86 (5.29)	9.28 (5.60)	0.28
Reform scenario (next two years)	9.76 (5.32)	9.50 (5.25)	9.57 (5.93)	9.61 (5.51)	0.91
Reform scenario (next ten years)	9.72 (5.89)	10.26 (5.66)	10.42 (6.29)	10.13 (5.96)	0.56
F-test. $H_0 : \text{IQR}_{\text{no-reform}} = \text{IQR}_{\text{reform}}$ :	next two years (p-value)			0.36	
	next ten years (p-value)			0.02	
Observations	162	154	171	487	

## Do households recognize house price uncertainty?

Frequency distribution of regional house price volatility (%) and movement between 2008 and 2012, head of the household

SD of house price movements (within the region)	%	Percentage price decline (within the region of residence)	%
0.00 — 0.04	0.0	0.00 — 0.05	6.0
0.04 — 0.06	22.0	0.05 — 0.10	29.2
0.06 — 0.08	44.6	0.10 — 0.15	38.6
0.08 — 0.10	24.6	0.15 — 0.20	21.8
0.10 — 0.12	4.3	0.20 — 0.25	3.9
0.12 — 0.14	4.5	0.25 — 0.30	0.6
Average	0.076	Average	0.118
Median	0.074	Median	0.112
SD	0.019	SD	0.048

Notes: N=410.  $SD(\log \text{ price index}_t - \log \text{ price index}_{t-1})$ , where  $t$  is the value of the index in the first quarter of the stated year.  $\log \text{ price index}_{2012Q1} - \log \text{ price index}_{2008Q1}$

## Yes, they do recognize house price uncertainty

Association between variability (IQR) of subjective house price movements and 'actual' regional house price risk. Dependent variable: subjective IQR, head of the household

	Conditional IQR			Uncondition IQR	
	No-reform Two years	Reform Two years	Reform Ten years	Two years	Ten years
S.D. of house price movements (within the region of residence)	38.117**	25.704*	23.483	27.135*	24.414
	(16.382)	(13.813)	(17.153)	(14.214)	(16.838)

*Notes:* N=410. Results of a multivariate regression for the head of the household. Included controls: see regression Table 3. Standard errors clustered at the postcode level in parentheses. Significant at the \*\*\* 1 percent; \*\* 5 percent; \* 10 percent level.

## Is precautionary saving affected by aggregate house price uncertainty?

- ▶ Buffer stock model developed by Carroll and Samwick (1998). Reduced form model for savings could be estimated with a 99% fit.
- ▶ Dependent variable: active savings to permanent income  $s$  as our dependent variable; following Giavazzi and McMahon, 2012).

$$s_i = \beta_0 + \sum_{a=2}^5 \delta_a \text{Ageclass}_{ai} + \beta_1 \text{IQR}_i + \beta_2 \mu_i + x_i' \theta + \epsilon_i,$$

where  $x_i'$  is a vector of control variables.

- ▶ Demographic factors and taste shifters.
- ▶ Expectations concerning the general economic situation.
- ▶ Income uncertainty: self-employed dummy and variance of the subjective probability to become unemployed.

## Is precautionary saving separately affected by policy uncertainty uncertainty?

$$s_i = \beta_0 + \sum_{a=2}^5 \delta_a \text{Ageclass}_{ai} + \beta_1 \Delta \text{IQR}_i + \beta_2 \Delta \mu_i + \beta_3 \text{IQR}_i^0 + \beta_4 \mu_i^0 + x_i' \theta + \epsilon_i,$$

where  $\Delta \text{IQR}_i$  equals  $\text{IQR}_i^1 - \text{IQR}_i^0$  which measures policy uncertainty:

**Policy uncertainty:** the additional uncertainty—over and above the house price uncertainty in a policy neutral scenario—due to a possible reform of the MID.

## Is precautionary saving affected by policy uncertainty uncertainty?

Regression results (OLS) head of the household, dependent variable: saving rate

	Short-term (two years)		Long-term (ten years)			
IQR	0.003 (0.002)		0.002 (0.002)	0.004** (0.002)		0.004* (0.002)
$\mu$	0.003** (0.002)		0.003** (0.002)	0.003*** (0.001)		0.003*** (0.001)
$\Delta$ IQR		0.005** (0.002)	0.019*** (0.007)		0.004** (0.002)	0.005 (0.010)
$\Delta\mu$		0.003** (0.002)	0.003 (0.007)		0.002** (0.001)	-0.006 (0.006)
IQR <sup>0</sup>		0.002 (0.002)			0.003 (0.002)	
$\mu^0$		0.003 (0.002)			0.003 (0.002)	
Constant	0.140** (0.056)	0.148** (0.058)	0.143** (0.056)	0.145** (0.061)	0.151** (0.066)	0.144** (0.062)
Adjusted $R^2$	0.091	0.089	0.093	0.103	0.097	0.099

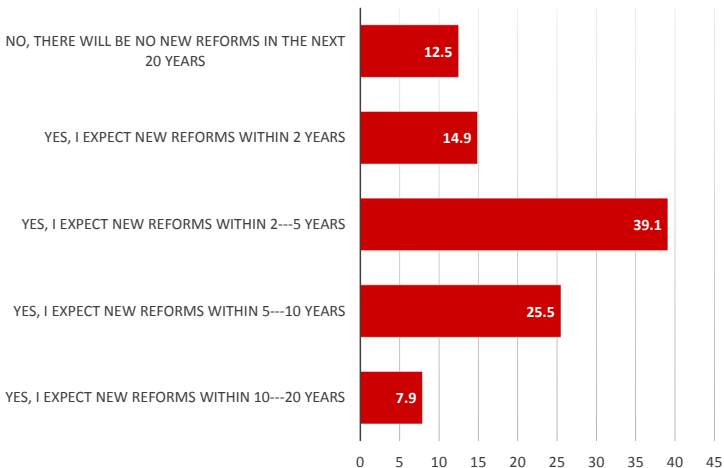
(N=410) Robust standard errors between parentheses. Significant at the \*\*\* 1 percent; \*\* 5 percent; \* 10 percent level.

## Magnitude of the effect

- ▶ Mean saving rate is 12.1 percent.
- ▶ Mean additional saving retained due to policy uncertainty about MID:  
 $.005 \times .382 = 0.2$  percent.
- ▶ Policy uncertainty due to a possible reform of the MID accounts for about 1.6 percent of total saving.
- ▶ Mean additional active saving retained per period due to reform is modest; about 80 euro.

## Did the reform clear it up?

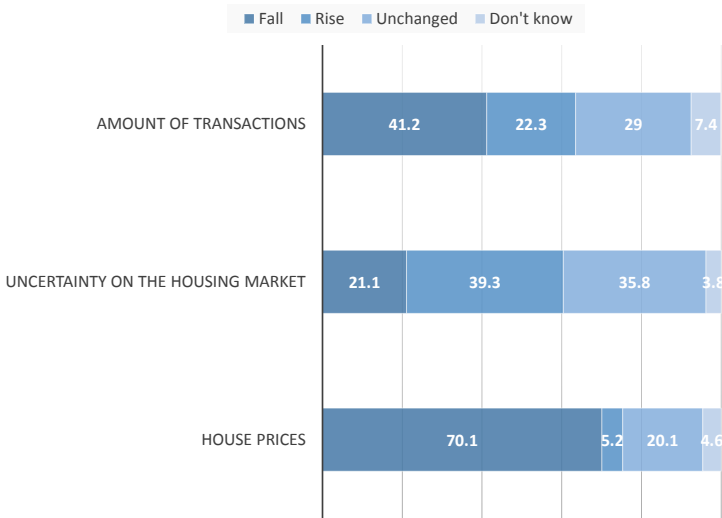
### Opinion about future reforms, head of the household



Source: 2012 Follow-up questionnaire. (N=1319).



## What will happen in 2013?



Source: 2012 Follow-up questionnaire. (N=1319).

## Conclusion

- ▶ Subjective measures of house price uncertainty contain useful information.
- ▶ Households who are more uncertain about aggregate house price movements (in the long run) *ceteris paribus* save more.
- ▶ Uncertainty about a possible reform of the MID increases saving.
- ▶ Effect of policy uncertainty is small but nontrivial.
- ▶ Reforms should be credible!
  - ▶ Only starters? Larger mortgages? Higher incomes?
- ▶ Policy makers should not under-estimate these second order effects.

## European Union (April 2013)

“With respect to housing, initiatives that eliminate fiscal incentives for taking on debt and that encourage mortgage loan repayments are welcome. **Recent measures by the government in this area appear to be steps in the right direction**, but they still have to be assessed in detail [· · ·]”

## IMF (May 2013)

“There is scope to gradually phase in caps to the size of MID in nominal terms and target MID to lower-income citizens. After prices have stabilized, announcing a time path and **gradually phasing in further housing reform measures** would help anchor expectations and avoid destabilizing markets.”