



EUROPEAN CENTRAL BANK

EUROSYSTEM

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# Trust in the central bank and inflation expectations

Understanding inflation: lessons from the past, lessons for the future?

ECB, Thursday 21 September 2017.

*\*The opinions expressed in the presentation are my own and do not reflect the views of the ECB,  
De Nederlandsche Bank or of the euro system.*

# Motivation

- Managing economic expectations has become a **key tool** in conducting monetary policy (Blinder et al., 2008).
- HHs with higher *inflation expectations*:
  - **More likely to borrow** through fixed-rate mortgages; **less likely to invest** in long-term bonds (Malmendier and Nagel, 2015).
  - **Higher readiness to purchase durables** (D'Acunto, Hoang and Weber, 2016).

## Motivation (cont.)

- High level of **trust in central bank** should help to effectively manage expectations and influence individual choices.
- For example, a high level of trust in the commitment and ability of the ECB to deliver on its mandate:
  - anchor medium and long term inflation expectations on the inflation target.
  - make the public view deviations from the target as temporary.

# Research question

- Does **trust in the ECB** contribute to people's...
  - **inflation expectations?**
  - **uncertainty** about inflation?
  - **'anchoring'** of expectations at inflation target?
- Distinguish between knowledge about ECB's objectives and trust in the ECB (**institutional credibility**).
- Expectations regarding **economic growth**.

# Measuring inflation expectations

- CentER Internet panel in the **Netherlands**, sponsored by the DNB.
- Interviews collected in **January** and **June 2015** via Internet (about 3,000 observations in total).
- Measure the distribution of expectations on *inflation* and *economic growth* asking **3 simple questions**.
- Given distributional assumptions (simple/ split triangular) one can compute all the *moments of the distribution of future economic outcomes* for **each individual** (Guiso et al., 2002).

## Expected Inflation

*What do you think will be the percentage change in the level of prices in the next twelve months? If you think prices on average will decrease, you can fill in a negative percentage. Would you please round off the percentage to one decimal? For example 1.3 or -1.3.*

- (a) Please give the *minimum* value: .... ( $Y_m$ )
- (b) Please give the *maximum* value: .... ( $Y_M$ )

## Expected Inflation (cont.)

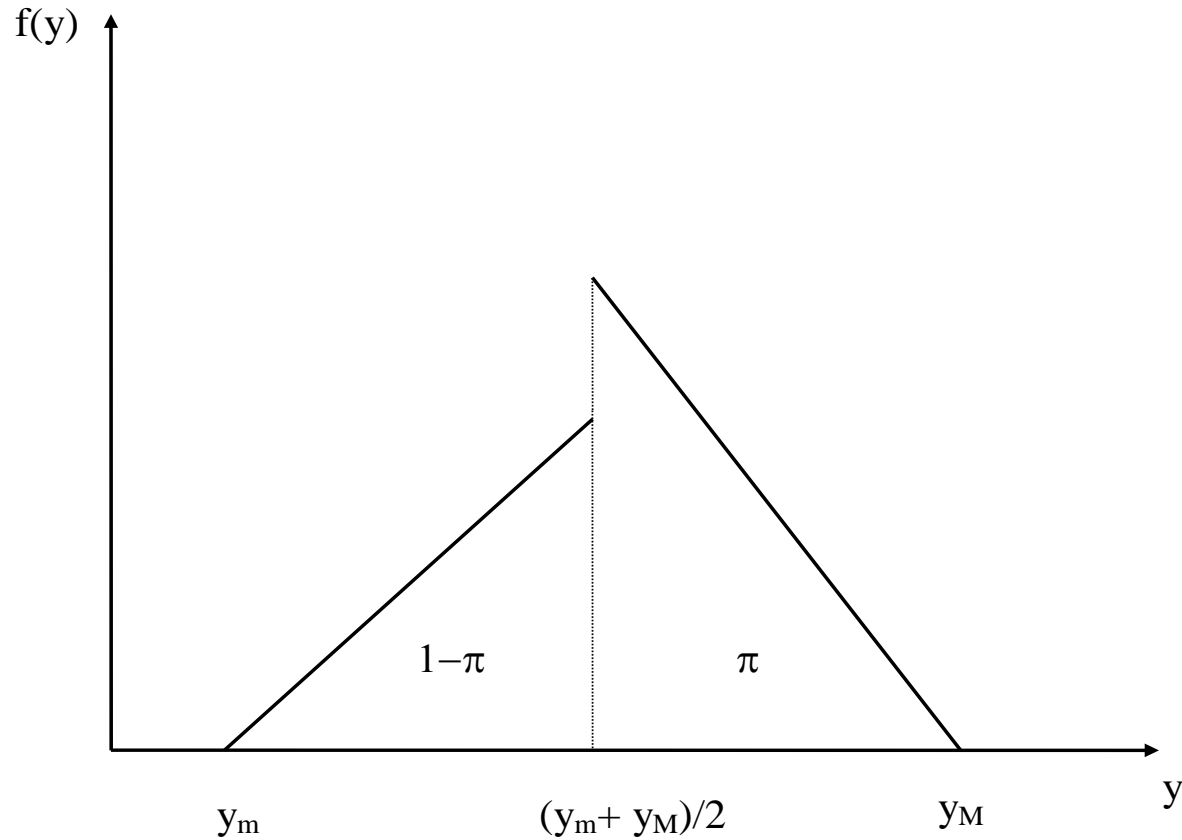
(c) What is the *probability* ( $\pi$ ) that the average increase in prices in the next 12 months is greater than:

$$X = (Y_m + Y_M)/2 ?$$

0	10	20	30	40	50	60	70	80	90	100
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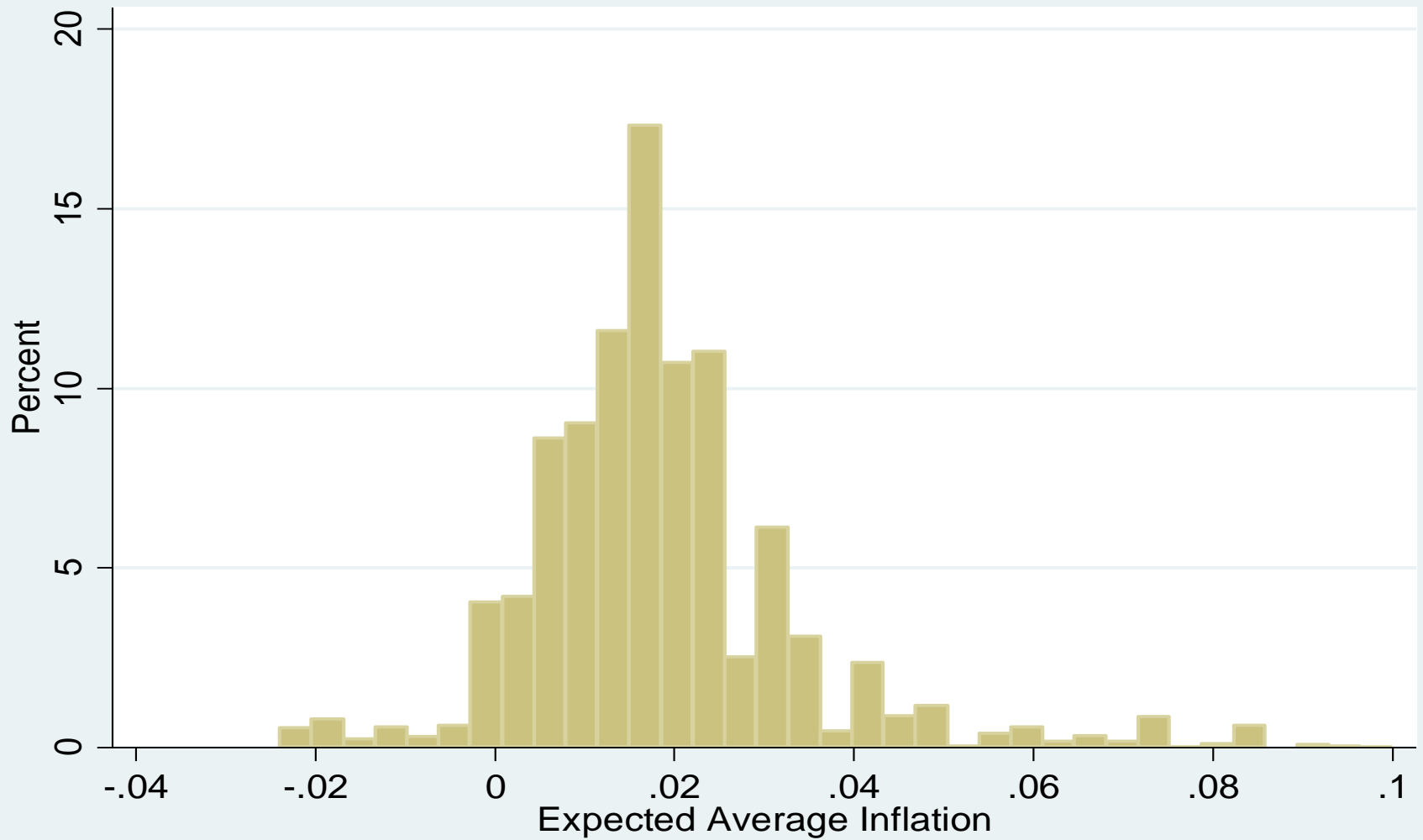
Absolutely no chance										Absolutely certain
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# Split Triangular Distribution





mean=.02; median=.016; std.dev=.019



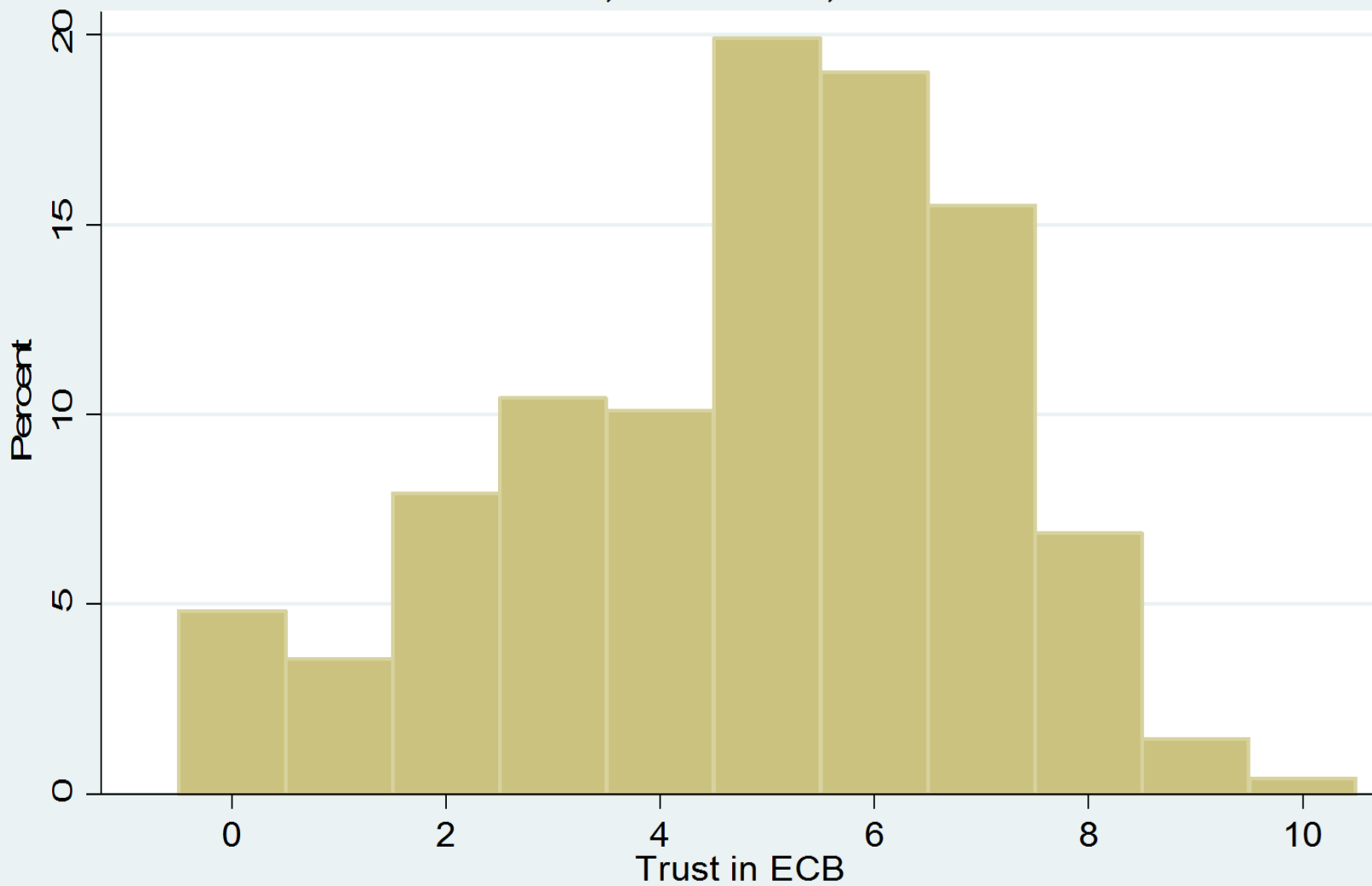
## Trust in the ECB

- How much do you trust the European Central Bank (ECB)? Please indicate your level of trust on a scale from 0 to 10, where 0 means you can't trust at all and 10 means that you fully trust.

[ ] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ] 6 [ ] 7 [ ] 8 [ ] 9 [ ] 10

- Similar questions on trust in other people; trust in DNB.
- Question does not mention ECB's objectives
  - we need to avoid conditioning of the answers.
  - we want to capture trust in the institution, not knowledge about it.

mean=5; median=5; std.dev=2



# Descriptive statistics

Variable	Mean	Median	Std. Deviation
Minimum expected inflation level	1.303	1.000	1.889
Maximum expected inflation level	2.699	2.000	2.743
Probability that the expected inflation level is above the average of the expected minimum and maximum values	0.469	0.500	0.185
Expected inflation	2.001	1.600	2.187
Variance of expected inflation	0.208	0.042	0.838
Minimum expected growth rate	0.965	1.000	1.499
Maximum expected growth rate	1.967	2.000	1.782
Probability that the expected growth Rate is above the average of the expected minimum and maximum values	0.415	0.500	0.186
Expected growth rate	1.465	1.500	1.520
Variance of expected growth rate	0.108	0.020	0.575
Trust in the ECB	4.769	5.0	2.163
Age	50.8	51.0	16.6
Female householder	0.452	0.0	0.498
Household size	2.488	2.0	1.252
Has a spouse/partner	0.747	1.0	0.435
High school graduate	0.383	0.0	0.486
University graduate	0.309	0.0	0.462
Household income	2,721.8	2,450.0	2,004.8
Number of Observations	3,117		

## Estimation

$$y_i = \alpha + \beta * trust\_ECB_i + \gamma X_i + u_i$$

- $y_i$  : *mean; variance* of expected inflation.  
 $X_i$  : age, female, couple, hh size, education, income, region dummies, wave dummy.  
(Std. errors are clustered at hh level)
- IV estimation using two instruments.

## IV Estimation: Instruments

- How often, if ever, have a plumber, builder, car mechanic or other repair person overcharged you or did unnecessary work in the past five years?
  - *Never; Once; Twice; 3 or 4 times; 5 times or more*  
~ 20% have been cheated at least once.
- Trust in other people.

OLS and IV: small negative effect on average expected inflation; larger negative effect on inflation uncertainty

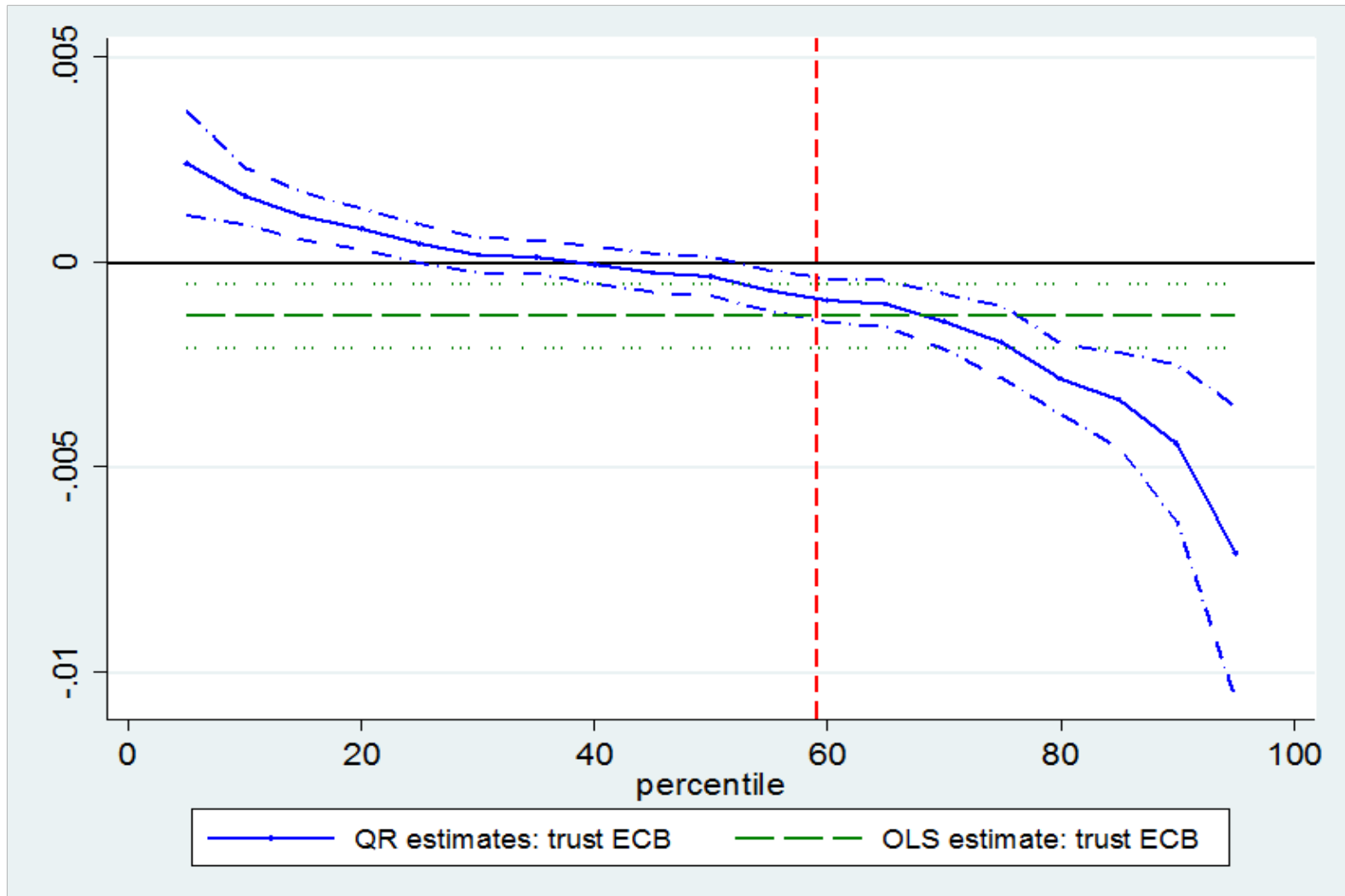
	Average Expected Inflation		Variance of Expected Inflation	
	OLS	IV	OLS	IV
Trust in ECB	-0.0006 ***	-0.0017 ***	-0.00012 ***	-0.00021 **
s.e.	0.00019	0.0006	0.00003	0.0001
Obs	3,055	2,632	3,055	2,632
<b>Trust in ECB (+1 SD)</b>	-0.0011 ***	-0.0035 ***	-0.00024 ***	-0.00042 **
<i>% of mean</i>	<b>6%</b>	<b>17%</b>	<b>16%</b>	<b>29%</b>
F-test (first stage)		86.43		86.43
Endogeneity test ( <i>pv</i> )		0.05		0.32
Overidentification test ( <i>pv</i> )		0.38		0.57

## Small negative association with avg. expected inflation

- Traditionally central banks were mainly concerned about inflation exceeding their target and communicated their commitment to raise interest rates to restrain inflation.
- A high level of public trust in the ECB is likely to reflect trust in ECB's commitment and ability to fight high inflation and thereby induces lower inflation expectations.
- Estimated effect from OLS **not uniform** across the percentiles of the inflation expectations distribution (use QRs).
- Strong negative association with variance of expected inflation: **some form of anchoring.**



# Quantile Regressions: Evidence for 'anchoring' at inflation target



# Quantile Regressions: interpretation

- At lower quantiles, higher trust leads to higher inflation expectations.
  - mostly holds for very low quantiles of expected inflation.
- At upper quantiles, higher trust leads to lower inflation expectations.
- Anchoring of expectations, more robust at higher quantiles than lower ones.

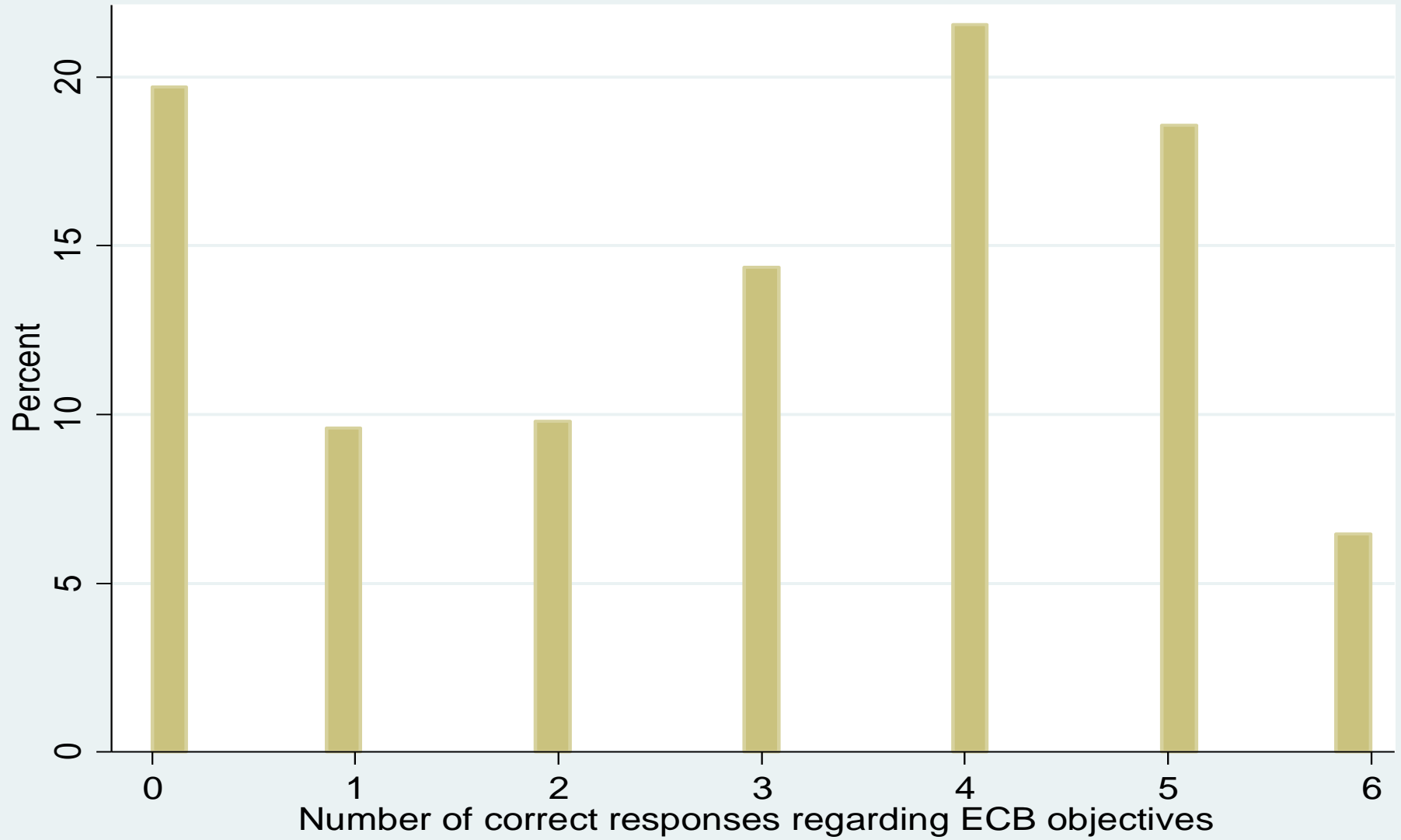
# Knowledge about ECB's objectives

Can you please indicate which of the following statements on main objectives/ tasks of the European Central Bank (ECB)?

True  False  Do not know

The main objectives/tasks of the ECB are ..

- .. an unemployment of at most 5%.
- .. setting the income tax rates.
- .. an inflation rate that is close but below 2%.
- .. an economic growth rate of at least 3%.
- .. to keep interest rates constant across time.
- .. supervision of large European banks.



## Evidence for institutional credibility

- Estimates of trust in the ECB unaffected when number of correct answers to the ECB-objectives questions are taken into account.
- High correlation of trust in the ECB and trust in DNB (.85): DNB is likely to have similar credibility as the ECB, but it does not have an inflation mandate anymore.

# Robustness checks

- Estimates of trust in the ECB unaffected when:
  - add as a control an individual financial literacy score (based on ‘Big-3’ literacy questions).
  - add as a control a measure of individual optimism based on deviations between self-reported life expectancy and mortality rates.
  - use alternative distributional assumptions to derive the moments of interest (split triangular; uniform; split uniform).

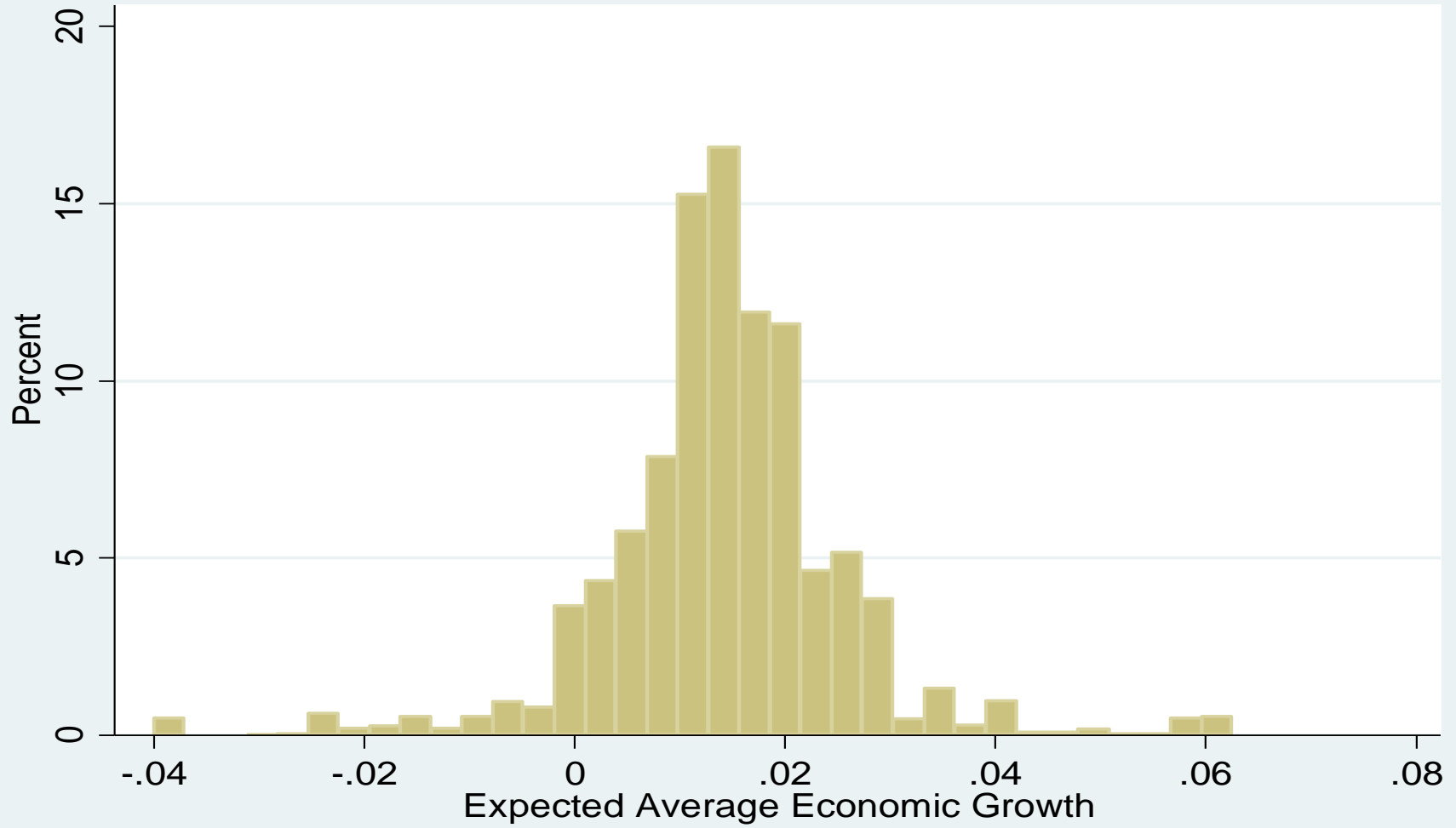
## Expected Economic Growth

*We are interested in your opinion on how well the Dutch economy will do in the future. What do you think will be the percentage rate of growth of the economy in the next 12 months? If you think that the economy will not grow but shrink you can fill in a negative percentage. Would you please round off the percentage to one decimal? For example 1.3 or -1.3.*

(a)  $Y_{min}$ ; (b)  $Y_{max}$  ; (c)  $\text{Prob} (Y > (Y_{min} + Y_{max})/2)$

- Trust in the ECB (+1SD):
  - increases expected GDP growth (by 11% to 16% of the respective sample mean).
  - no effect on GDP growth uncertainty.

mean=.014; median=.015; std.dev=.012





# Conclusions

- Trust in the ECB:
  - **Lowers somewhat average expected inflation and decreases considerably inflation uncertainty.**
  - Contributes to ‘anchoring’ of inflation expectations.
  - **Increases expectations for growth**; no effects on growth uncertainty.
- Effects distinct from *knowledge* about the ECB’s objectives: **institutional credibility.**
- A CB is able to influence economic expectations and move financial markets not only directly - by changing interest rates - *but also indirectly* by maintaining a high level of public trust.

**Thank you!**

## Question on Trust in the ECB: no explicit reference to the inflation target

- Avoid conditioning the answers to the trust in the ECB question e.g., those who expect 3 percent inflation next year, when reminded the inflation target may reduce their reported trust.
- Need to measure respondents' trust in the ECB given their current knowledge about economic affairs, without influencing this knowledge.
- Aim to distinguish the notion of trust as institutional credibility from that of trust as institutional knowledge (control separately for the two in the empirical specification).
- Inflation rate is the primary target, but mandate states that should promote economic growth, with no prejudice to achieving the inflation target.

# OLS and IV: positive effect on average expected GDP growth; no effect on GDP growth uncertainty

	Average Expected Growth		Variance of Expected Growth	
	OLS	IV	OLS	IV
Trust in ECB	0.00077 ***	0.00118 ***	-0.00002	-0.00003
s.e.	0.00011	0.00035	0.00002	0.00005
Obs	3,150	2,714	3,150	2,714
<b>Trust in ECB (+1 SD)</b>	0.00154 ***	0.00236 ***	-0.00004	-0.00006
<i>% of mean</i>	<b>11%</b>	<b>16%</b>	5%	8%
F-test (first stage)		94.58		94.58
Endogeneity test ( <i>pv</i> )		0.19		0.92
Overidentification test ( <i>pv</i> )		0.39		0.41