Human Frictions to the Transmission of Economic Policy

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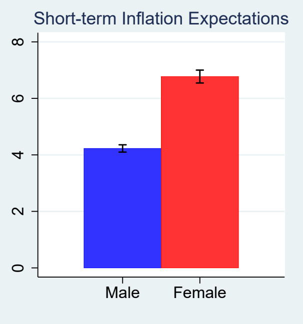
Stylized Fact I: Kashyap Puzzle

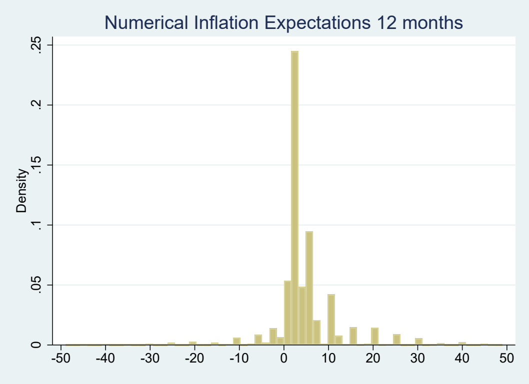


Source: New York Fed Survey of Consumer Expectations

- "Unless someone can explain to me why women always have higher inflation expectations ..."

Kashyap (2015)

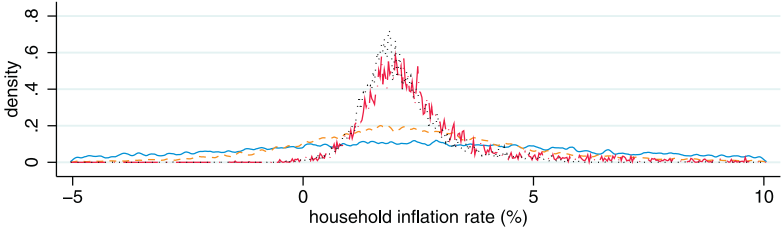
Stylized Fact II: Cross-sectional Dispersion in Expectations



Source: New York Fed Survey of Consumer Expectations

- Large cross-sectional dispersion in inflation expectations
- Despite inflation target of 2% and realized inflation below 2%

Stylized Fact III: Cross-sectional Dispersion in Realizations



Source: Kaplan & Schulhofer-Wohl (JME, 2017)

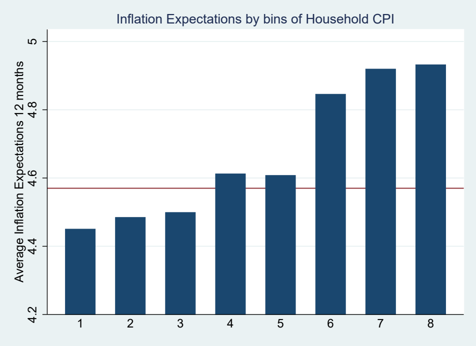
- Large cross-sectional dispersion in realized shopping-bundle inflation
- Interquartile range of 6.7 percentage points
- Differences in price paid drive dispersion, not goods purchased

Shopping and the Kashyap Puzzle

Source: D'Acunto, Malmendier, Weber (2019)

- Large difference in inflation expectations by gender *within* household
- Unconditional difference driven by differences in grocery shopping

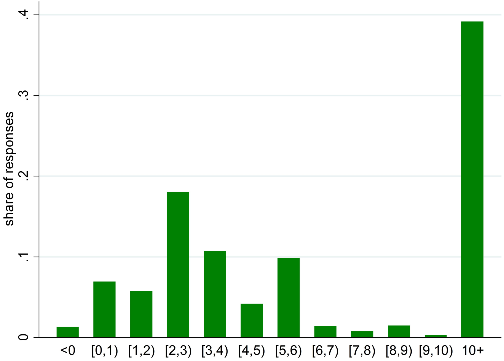
Observed Price Changes and Expected Inflation



Source: D'Acunto, Malmendier, Ospina, Weber (2019)

- Sort households into bins by household CPI from low to high
- High-low portfolio: difference in expected inflation of 0.5 percentage points
- Economically sizeable given inflation target of 2%

Fed Inflation Target



Source: Coibion, Gorodnichenko, Weber (2019)

- Only 50% think inflation target between 0% and 5%
- 40% thinks Fed has inflation target >= 10%

Forecast Revisions

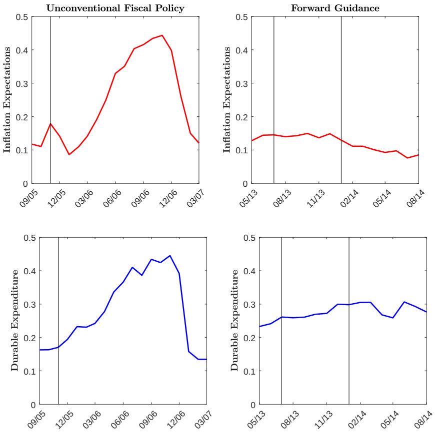
$$\mathbb{E}_i^{post}\pi - \mathbb{E}_i^{pre}\pi = a + b \times Treatment_i + \beta X_i + error_i$$

Treatments	Immediate revision (1)	(2)
Population growth	$-0.224*$	$-0.271**$
	(0.116)	(0.120)
Past inflation (2.3%)	$-1.170***$	$-1.241***$
	(0.114)	(0.120)
Inflation Target	$-1.087***$	$-1.130***$
	(0.113)	(0.120)
Fed inflation forecast (1.9%)	$-1.166***$	$-1.240***$
	(0.113)	(0.120)
FOMC statement	$-1.284***$	$-1.298***$
	(0.113)	(0.119)
USA today coverage	$-0.469***$	$-0.555***$
	(0.116)	(0.121)
Unemployment	$-0.348***$	$-0.352***$
	(0.115)	(0.121)
Gas Price	$1.490***$	$1.420***$
	(0.125)	(0.130)
Controls for demographics	No	Yes
Nobs	19,654	17,979

Source: Coibion, Gorodnichenko, Weber (2019)

- Strong forecast revision of individuals
- Media coverage only weak effects

Consumption and Spending



Source: D'Acunto, Hoang, Weber (JME, 2019)

- Large effects of pre-announced VAT increases on inflation expectations and spending
- Effect true across overall population and across countries
- Forward guidance announcement do not move expectations and choice

Motivation

- Policy assumes households understand economic incentives fully
  - Forward guidance
    Eggertsson & Woodford (2003)
  - Unconventional fiscal policies
    D'Acunto, Hoang, & Weber (2018)
  - Conventional fiscal policies
    Farhi & Werning (2017)
- **BUT** policies often less effective: e.g., *forward guidance puzzle*
  Del Negro, Giannoni, & Patterson (2015)
- Recent theory literature: heterogeneous agents & uninsurable shocks
  McKay, Nakamura, & Steinsson (2016); Kaplan, Moll, & Violante (2018); Hagedorn et al (2018)

Research Question

"[We assume] Unrealistic cognitive abilities of decision makers"

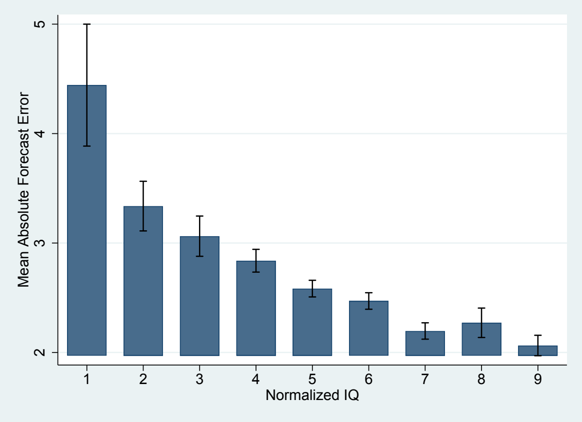
Woodford (2018)

- Large XS heterogeneity in cognitive abilities + complex policies
- (How much) Does limited cognition matter for policy effectiveness?
- Why might cognitive abilities matter?
  - Cognitive costs of gathering infomation about current state
  - Cognitive costs of forming expectations
  - Inability to optimize (intertemporally)
- Main empirical hurdles
  - Need to measure cognitive abilities for a representative sample
  - Need to measure impact on policy effectiveness

This Paper

- Measure IQ for all men in Finland from Finnish Military Forces
- Match with unique data on inflation and other expectations
- Link to tax records, observe households' full balance sheets
- Use matched data to
  - Construct forecast errors for inflation by cognitive abilities
  - Estimate Euler equations
  - Measure Δ in propensity to take out loan to Δ interest rates

Overview of Results: Absolute Forecast Errors by IQ



- Men with low IQ: absolute forecast error for inflation of 4.5%
- Decreases monotonically with IQ
- Effect unrelated to income and education

Other Main Findings

- High IQ men
  - Adjust consumption plans more to inflation expectations
  - Both verbal and quantitative IQ matter
  - Perceptions of current inflation consistent with past expectations
  - Increase propensity to take out loan after cut in rates
  - Decrease propensity to take out loan after increase in rates
- Education, income, and "random" answering do not drive findings

Cognitive abilities important friction to the transmission of policy

Data Sources

- European harmonized survey on consumption climate (*EU*)
  - 1,500 representative Finnish individuals every month
  - Questions about aggregate and personal economic expectations
  - Sample period: March 1995–March 2015
  - Rich demographics (age, income, marital status, city size, kids, job)
- Military entrance test data (men) from *Finnish Armed Forces*
- Tax and other administrative data from *Statistics Finland*

Cognitive Ability Data

- Mandatory military service in Finland: Finnish Armed Forces (FAF)
- Around age 19, 120 questions to measure cognitive abilities
- FAF aggregates scores into a composite: IQ
- FAF standardizes IQ to follow a stanine distribution
  - 9 points to approximate normal
  - Lowest 4% of scores at least 1.75 std from mean: standardized IQ of 1
  - 4% with highest test scores: standardized IQ of 9

EU Survey: Purchasing Plans

Question 8

In view of the general economic situation, do you think that now it is the right moment for people to make major purchases such as furniture, electrical/ electronic devices, etc.?

Answer choices: "it is neither the right moment nor the wrong moment," "no, it is not the right moment now," or "yes, it is the right moment now."

EU Survey: Inflation Expectations

Question 6

By how many per cent do you expect consumer prices to go up/ down in the next 12 months?

Answer choices: Consumer prices will increase by XXX.X% / decrease by XXX.X%.

EU Survey: Macro Expectations

Question 22

When you think about the general economic situation in Finland, do you think it is ...?

Answer choices: "very bad time to borrow," "pretty bad time to borrow," "pretty good time to borrow," or "very good time to borrow."

Inflation Expectations by IQ

	Low IQ	2	3	4	5	6	7	8	High IQ
Mean	3.46	2.80	2.58	2.42	2.40	2.36	2.28	2.30	2.26
Std	8.70	5.93	5.52	4.66	4.66	4.16	3.47	4.13	3.31
Nobs	928	2,221	2,860	7,011	9,528	8,099	6,030	3,213	2,688

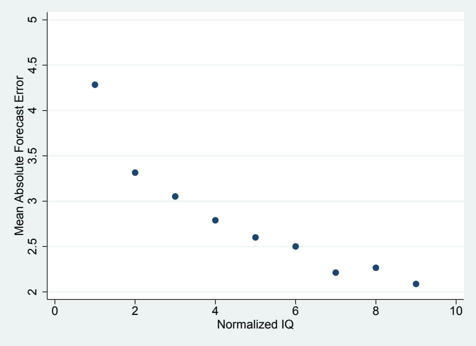
Low IQ men have

- Higher average inflation expectations
- Larger forecast dispersion

Forecast Error by IQ

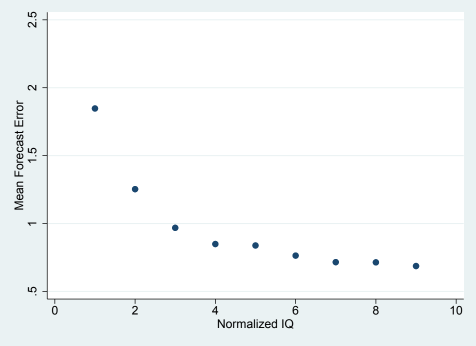
- General upward bias in inflation expectations
- How informed are individuals about aggregate inflation?
- Measure forecast accuracy by forecast error
- Forecast error: predicted inflation minus ex-post realized inflation
- Measure average forecast error for all men by IQ

Mean Absolute Forecast Error by IQ cont.



- Absolute forecast errors twice as large for low IQ men than for high IQ men
- Monotonic relationship btw absolute forecast error and IQ

Mean Forecast Error by IQ cont.

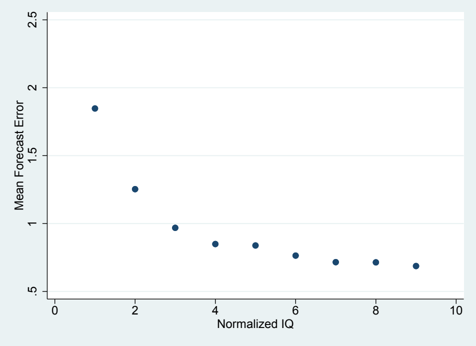


- Similar pattern for average forecast error
- Monotonic relationship btw forecast error and IQ

IQ versus Education

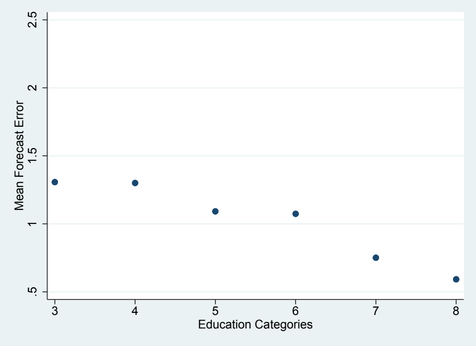
- IQ: innate cognitive abilities or education?
- Difference important for policy
- IQ measured at age of 19 before college
  - Homogeneous society and all education free
- Baseline results control for education
- Compare forecast errors by college and IQ

Forecast Error by IQ



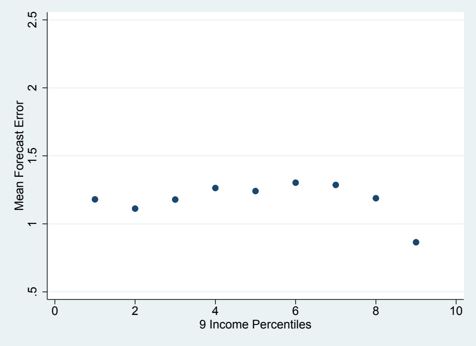
- Monotonic relationship btw forecast error and IQ
- Average forecast error 4 times larger for low IQ compared to high IQ men

Forecast Error by Education



- Education dummies: International Standard Classification of Education
- No relationship between average forecast error and education

Forecast Error by Income

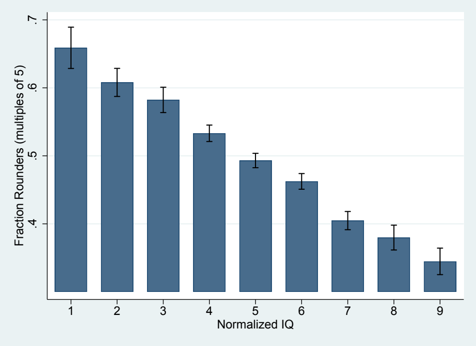


- Taxable income: 9 income percentile dummies
- No relationship between average forecast error and income

IQ, Rounding & Implausible Values

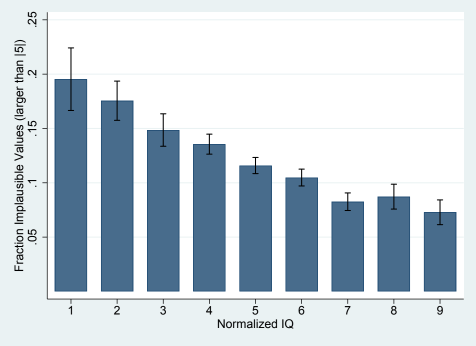
- Inflation difficult concept
- Individuals uncertain about answers
- Rounding to multiples of 5 as evidence of uncertainty
  Binder (2017), Manksi & Molinari (2010)
- Household survey show general upward bias in expectations
- During sample actual inflation hoovered around 2%
- Are low IQ men more likely to report "implausible" values?

IQ and Rounding



- Monotonic relationship btw fraction of rounders and IQ
- Fraction of rounder twice as large for low IQ compared to high IQ men

IQ and Implausible Values

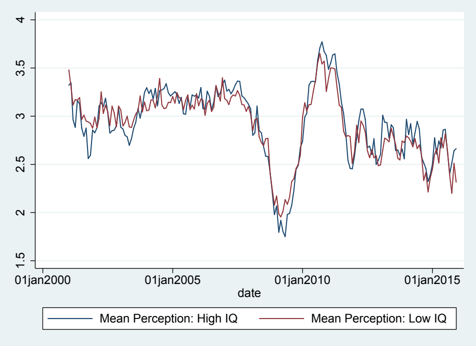


- Monotonic relationship btw fraction of respondends with large values and IQ
- Fraction almost 3 times larger for low IQ compared to high IQ men

Low Cognitive Abilities and Other Outcomes

- Concern: individuals w/ low cognitive abilities answer randomly
  - e.g., to finish fast
- Limit interpretation of cognitive abilities on effectiveness of policies
- Compare other outcomes for men with low and high cognitive abilities
  - Question on how evaluate current economic condition in Finland by IQ

Current Situation in Finland by IQ



- Averages for low and high IQ virtually indistinguishable
- Alleviates concerns men with low cognitive abilities answer randomly

Past Expectations and Current Perceptions

- Rational expectations (RE) $\rightarrow$ corr(past expectation, perception) > 0
- Rotating panel from 1995 until 1999
- Three times with 6-month lag
- Regress perception of current inflation on past expectations

Past Expectations and Current Perceptions cont.

	high IQ (1)	low IQ (2)	high IQ (3)	low IQ (4)
Past Inflation expectation	0.23***	0.045	0.23***	0.03
	(5.11)	(1.47)	(3.49)	(0.54)
Time fixed effects	X	X	X	X
Demographics			X	X
adj. R^2	0.02	0.00	0.01	0.00
Nobs	1,378	1,209	1,083	776

Standard errors in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

- Strong assocation for men with high IQ
- No assocation for men with low IQ conditional on demographics

Past Expectations and Current Expectations

- Realized inflation highly persistent
- RE $\rightarrow$ corr(past expectation, current expectation) > 0
- Regress current inflation expectations on past expectations

Past Expectations and Current Expectations cont.

	high IQ (1)	low IQ (2)	high IQ (3)	low IQ (4)
Past Inflation expectation (6m)	0.28***	0.03		
	(5.33)	(1.00)		
Past Inflation expectation (12m)			0.26***	0.03
			(2.38)	(1.21)
Time fixed effects	X	X	X	X
Demographics	X	X	X	X
adj. R^2	0.02	0.01	0.01	0.00
Nobs	1,368	1,192	563	482

Standard errors in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

- Strong assocation for men with high IQ both for 6 and 12 months ago expectations
- Weak assocation for men with low IQ
- Results only true during periods of persistent inflation

Inflation Expectations and Purchasing Propensities

- Men with low cognitive abilities have larger forecast errors
- But do they still substitute intertemporally (Euler equation)?
- i.e., do consumption plans respond to changing inflation expectations?
- Relate inflation expectations to propensity to buy durables by IQ

Baseline Specification: Multinomial Logit

- Assume survey answer is random variable y
- Define the response probabilities as $P(y = t|X)$
- Assume the distribution of the response probabilities is

$$P(y = t|X) = \frac{e^{X\beta_t}}{1 + \sum_{z=1,2} e^{X\beta_z}},$$

- Estimate β_t via maximum likelihood
- Marginal effect: derivative of $P(y = t|x)$ with respect to x
- Empirically: define "it's neither good nor bad time" as baseline

Euler Equations

Marginal Effects: $$\frac{\partial P(y=t|x)}{\partial x} = P(y=t|x)\left[\beta_{tx} - \sum_{z=0,1,2} P(y=z|x)\beta_{zx}\right]$$

		Men with IQ data	Men high IQ	Men low IQ
	(1)	(2)	(3)	(4)
Inflation expectation				
Demographics				
Pseudo R^2				
Nobs				

Standard errors in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

- LHS: Answer for good time to buy
- RHS: Dummy for inflation increase
- Demo: age, age2, male, single, log income, unemployed, kids, urban, helsinki, college

Euler Equations cont.

Marginal Effects: $$\frac{\partial P(y=t|x)}{\partial x} = P(y=t|x)\left[\beta_{tx} - \sum_{z=0,1,2} P(y=z|x)\beta_{zx}\right]$$

	(1)	Men with IQ data (2)	Men high IQ (3)	Men low IQ (4)
Inflation expectation	0.0214***	0.0147	0.0358***	−0.0096
	(0.0047)	(0.0100)	(0.0119)	(0.0138)
Demographics	X	X	X	X
Pseudo R^2	0.0067	0.0107	0.0108	0.0091
Nobs	311,164	32,862	16,606	16,256

Standard errors in parentheses

$*p < 0.10, **p < 0.05, ***p < 0.01$

All Finns: Higher inflation → 2% more likely to answer "good time to purchase durables"

Euler Equations cont.

Marginal Effects: $$\frac{\partial P(y=t|x)}{\partial x} = P(y=t|x)\left[\beta_{tx} - \sum_{z=0,1,2} P(y=z|x)\beta_{zx}\right]$$

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Finnish men with IQ data: no association btw inflation expectations and purchasing propensities

Euler Equations cont.

Marginal Effects: $$\frac{\partial P(y=t|x)}{\partial x} = P(y=t|x)\left[\beta_{tx} - \sum_{z=0,1,2} P(y=z|x)\beta_{zx}\right]$$

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Nobs	311,164	32,862	16,606	16,256

Standard errors in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

- Strong association for men with high IQ
- No association for men with low IQ

Euler Equations: Financial Constraints

- Low IQ men do not adjust consumption plans to inflation expectations
- Maybe low IQ men hand to mouth, constrained?
- Limit sample to individuals unlikely to be constrained
- Focus on men with income above threshold: 25^{th} or 50^{th} percentile

Euler Equations: Financial Constraints cont.

Marginal Effects: $$\frac{\partial P(y=t|x)}{\partial x} = P(y=t|x)\left[\beta_{tx} - \sum_{z=0,1,2} P(y=z|x)\beta_{zx}\right]$$

	Income $> 50^{th}$ percentile$_t$		Income $> 25^{th}$ percentile$_t$	
	Men high IQ	Men low IQ	Men high IQ	Men low IQ
	(1)	(2)	(3)	(4)
Inflation expectation	0.0306**	0.0022	0.0343***	−0.011
	(0.0154)	(0.0195)	(0.0130)	(0.0130)
Demographics	X	X	X	X
Pseudo R^2	0.0127	0.0121	0.0112	0.0096
Nobs	10,723	9,514	14,852	14,383

Standard errors in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

- Strong assocation for men with high IQ
- No assocation for men with low IQ

Euler Equations vs Income Expectations

- Inflation expectations possibly correlated with income expectations
  - Phillips curve
  - Indirect effects of monetary policy (Kaplan, Moll, & Violante (2018))
- Split sample by personal economic outlook
  - Answer to "Do you think your household's income will increase?"

Euler Equations vs Income Expectations cont.

Marginal Effects: $$\frac{\partial P(y=t|x)}{\partial x} = P(y=t|x)\left[\beta_{tx} - \sum_{z=0,1,2} P(y=z|x)\beta_{zx}\right]$$

	High Income Expectations		Low Income Expectations	
	Men high IQ	Men low IQ	Men high IQ	Men low IQ
	(1)	(2)	(3)	(4)
Inflation expectation	0.0294*	−0.0166	0.0371**	−0.0046
	(0.0165)	(0.0190)	(0.0158)	(0.0176)
Demographics	X	X	X	X
Pseudo R^2	0.0115	0.0083	0.0106	0.0104
Nobs	7,337	6,409	9,269	9,847

Standard errors in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

- Strong assocation for men with high IQ
- No assocation for men with low IQ

Subcategories of Cognitive Abilities

- FAF test: 120 questions in 3 categories: logic, reading, & arithmetic
- Correlations between subcategories: 56% to 66%
- Estimate Euler equations by subcategory of cognitive abilities
- Results almost identical to ones for overall IQ

Transmission of Policy

- Low cognitive abilities
  - Larger forecast errors for inflation
  - Don't adjust consumption to inflation expectations
- Do patterns matter for the effectiveness of economic policy?

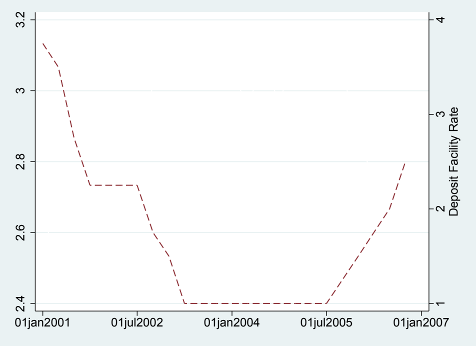
Transmission of Policy cont.

- Study propensity to take out a loan to changing interest rates
- May 2001: ECB lowers policy rate from 3.75% to 3.50%
- Trough of 1.00% in June 30, 2003
- Recessions in large countries such as France and Germany drive cuts
- Independent of the origin, low rates $\rightarrow$ more favorable financing

Transmission of Policy cont.

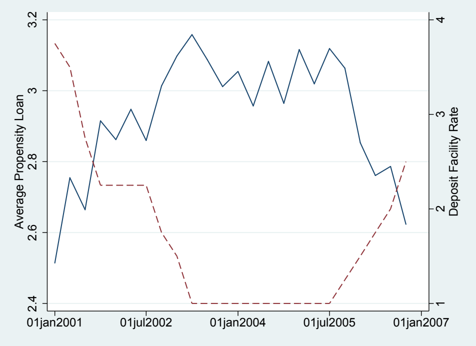
- Dec 2005: rates start increasing again
- Dec 2006: deposit facility rate at 2.50%
- Study propensity to take out loan by IQ
- Both for increase and decrease in rates
- Allows to differentiate from borrowing contraits
- Also: **in general** good time to take out loan

Deposit Facility Rate: Beginning of Quarter



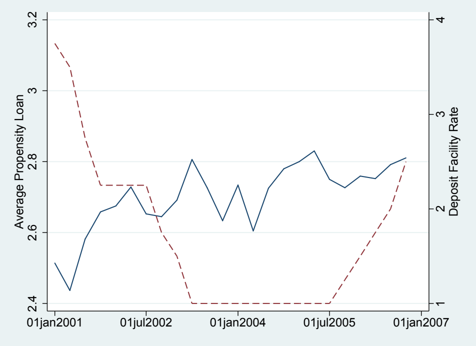
- Till end 2001: rate falls from 3.75% to 2.25%
- Trough of 1% in June 2003
- December 2005 rates start increasing; 2.5% end of 2006

Propensity to take out Loan: High IQ



- Early 2001: average propensity to take out loans of around 2.5
- Next 2.5 years: rates fall and propensities increase to more than 3
- Till mid 2005: rates and propensities flat
- Afterwards: rates increase, propensities fall

Propensity to take out Loan: Low IQ



- Early 2001: average propensity to take out loans of around 2.6
- Next 6 years: propensities hover around 2.8

Transmission of Policy cont.

- Δ propensity taking out loan by IQ for decreasing & increasing rates
- Population w low cognitive abilities doesn't react to incentives
- Policies less effective than representative agent models predict?
- But: other differences across high and low IQ men might drive effect
- Estimate regressions controlling for characteristics

Decreasing Rates

- Focus on sample Jan 2001 to June 2003

$$\text{Loan}_{i,t} = \text{cons} + \beta_1 \text{ High IQ}_i + \beta_2 \text{ Post}_t + \beta_3 \text{ High IQ}_i \times \text{Post}_t$$

- Loan: dummy 1 if says good time to take out loan
- High IQ: dummy 1 if normalized IQ is larger than 5
- Post: dummy 1 if after May 2001

Decreasing Rates cont.

	OLS (1)	Logit (2)	Probit (3)	OLS (4)	Logit (5)	Probit (6)
High IQ	−0.028	−0.0241	−0.0248	−0.048	−0.0445	−0.0448
	(−0.95)	(−0.88)	(−0.88)	(−1.48)	(−1.51)	(−1.45)
Post	0.062***	0.059***	0.060***	0.065***	0.060**	0.062**
	(2.84)	(2.66)	(2.65)	(2.58)	(2.31)	(2.35)
Post × High IQ	0.095***	0.091***	0.092***	0.088***	0.088***	0.088***
	(2.96)	(3.18)	(3.09)	(2.51)	(2.80)	(2.71)
Demographics				X	X	X
R^2	0.0116	0.0101	0.0101	0.0479	0.0463	0.0464
Nobs	5,850	5,850	5,850	4,070	4,070	4,070

t-stats in parentheses

$*p < 0.10, **p < 0.05, ***p < 0.01$

- Unconditional higher likelihood (6%) to say good time to take out loan
- Effect twice as large for men with high IQ

Increasing Rates

- Focus on sample July 2003 to Dec 2006

$$\text{Loan}_{i,t} = \text{cons} + \beta_1 \text{ High IQ}_i + \beta_2 \text{ Post}_t + \beta_3 \text{ High IQ}_i \times \text{Post}_t$$

- Loan: dummy 1 if says good time to take out loan
- High IQ: dummy 1 if normalized IQ is larger than 5
- Post: dummy 1 if after Dec 2005

Increasing Rates cont.

	OLS (1)	Logit (2)	Probit (3)	OLS (4)	Logit (5)	Probit (6)
High IQ	0.079***	0.081***	0.081***	0.036***	0.041***	0.041***
	(7.27)	(7.44)	(7.46)	(2.89)	(3.24)	(3.18)
Post	0.005	0.005	0.005	−0.033**	−0.031**	−0.034**
	(0.37)	(0.36)	(0.36)	(−2.12)	(−2.00)	(−2.15)
Post × High IQ	−0.075***	−0.086***	−0.083***	−0.082***	−0.094***	−0.095***
	(−3.72)	(−3.67)	(−3.69)	(−3.77)	(−3.58)	(−3.70)
Demographics				X	X	X
R^2	0.0067	0.0067	0.0067	0.0442	0.0465	0.0475
Nobs	8,601	8,601	8,601	5,937	5,937	5,937

t-stats in parentheses

$*p < 0.10, **p < 0.05, ***p < 0.01$

- Weak decrease to say good time to take out loan to increasing rates
- High IQ large decrease in propenstiy to take out loan

Total Debt by IQ

- Do low IQ men react less because cut off financial markets?
- Measure total debt by IQ from Statistics Finland

	Low IQ	2	3	4	5	6	7	8	High IQ
Mean	18,558	22,789	25,340	26,950	27,209	27,058	32,019	30,701	33,149
Std	40,825	47,247	46,359	47,035	46,228	47,244	49,231	50,102	55,361
Total Debt / Taxable Income by IQ									
	0.82	0.77	0.76	0.75	0.78	0.80	0.81	0.87	0.93

- Low IQ men and high IQ substantial amount of debt
- Unlikely restricted access to financial markets drive Δ loan propensity to Δ rate

Change in Debt and Changes in Interest Rates

- So far: inflation expectations, interest rates, and survey decisions
- Family & friends or financial advisors shape actual decisions?

$$\Delta debt_{i,t} = \alpha + \beta IQ_{i,t} \times \Delta rates_t + \zeta IQ_{i,t} + X'_{i,t}\delta + \eta_t + \epsilon_{i,t}$$

	2001-2007	
	(1)	(2)
$IQ_{i,t} \times \Delta$ rates	$-121.73***$	$-89.10**$
	(41.58)	(41.80)
$IQ_{i,t}$	45.74	59.21
	(33.10)	(35.83)
Demographics		X
Year FE	X	X
Nobs	154,175	152,100

- High-IQ men decrease debt EUR 90 to 120 more to 1% increase in rate
- Corresponds to 3% to 4% of the average change during sample

Channels

- Why might cognitive abilities matter?
  - Cognitive costs of gathering infomation about current state
    -
  - Cognitive costs of forming expectations
    -
  - Inability to optimize (intertemporally)

Euler Equations by Perception Errors

- Financial constraints or (income) expectations unlikely drivers
- Low-IQ men less informed about economic fundamentals
- Low-IQ men miscalibrated beliefs about macroeconomic variables?
- Split sample by perception error for inflation at individual level

Euler Equations by Perception Errors cont.

	Abs Perception Error$_{it}$ $<=$ Median$_t$	
	Men high IQ	Men low IQ
	(1)	(2)
Inflation expectation	0.0472***	0.0209
	(0.0153)	(0.0165)
Demographics	X	X
Pseudo R^2	0.0104	0.0061
Nobs	10,115	8,984

Standard errors in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

- Strong assocation for men with high IQ and accurate inflation perceptions
- No assocation for men with low IQ even if accurate inflation perceptions

Channels cont.

- Why might cognitive abilities matter?
  - Cognitive costs of gathering infomation about current state
    - Same patterns for low-IQ with accurate inflation perception
  - Cognitive costs of forming expectations
    -
  - Inability to optimize (intertemporally)

Euler Equations by Forecast Errors

- Low-IQ men less informed about current inflation
- Do low-IQ men not react because less informed about future inflation?
- Split sample by forecast error for inflation at individual level

Euler Equations by Forecast Errors cont.

	Abs Forecast Error$_{it}$ $<=$ **Median**$_t$	
	Men high IQ	Men low IQ
	(1)	(2)
Inflation expectation	0.0401**	0.0069
	(0.0184)	(0.0243)
Demographics	X	X
Pseudo R^2	0.0101	0.0083
Nobs	9,699	8,694

Standard errors in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

- Strong assocation for men with high IQ both for high and low forecast errors
- No assocation for men with low IQ even if accurate inflation expectations

Channels cont.

- Why might cognitive abilities matter?
  - Cognitive costs of gathering infomation about current state
    - Same patterns for low-IQ with accurate inflation perception
  - Cognitive costs of forming expectations
    - Same patterns for low-IQ with accurate inflation expectations
  - Inability to optimize (intertemporally)
    - Inability to map objective state into optimal action

      Ilut & Valchev (2017)

Conclusion

- Low cognitive abilities:
    - Larger forecast errors
    - Larger forecast dispersion
    - No adjustments in consumption plans
    - Lower response in propensity to take out loan to lower rates
- Cognitive abilities impediment to effectiveness of policy
- Unintended consequences: redistribution from low to high IQ men

Implications for the Conduct of Monetary Policy

- Salience, fin education, & policy communication important

- Households react to salient policy changes
  D'Acunto, Hoang, & Weber (2018)

- Coverage in media not sufficient for communication effectiveness
  Coibion, Gorodnichenko, & Weber (2018)

- Simple, easy-to-understand, & repeated communication required