Discussion of "IQ, Expectations, and Choice"

FRB Cleveland: Inflation Drivers and Dynamics Conference

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May 2019

Main Point of the Paper?

"There are idiots, look around." -Larry Summers

Big Picture Overview

This paper is part of a research agenda going after two broader questions:

1. How do individuals form expectations?
2. How do expectations affect actions?

Small Picture Overview

More specifically, this paper is about:

1. How cognitive ability (IQ) relates to properties of inflation expectations
2. How cognitive ability impacts consumption/saving decisions:
    - Intertemporal substitution
    - Retirement saving

Outline

1. Summary and suggestions
2. Question: what do we do with this?

Background

- Merge three data sources from Finland:
  - Discrete IQ data from Finnish military test
  - Macroeconomic survey data
  - Consumption, saving, and borrowing plans
- Bottom line: high IQ men are "better" inflation forecasters

Figure 1: **Mean Absolute Forecast Error for 12-Month-Ahead Inflation by IQ**

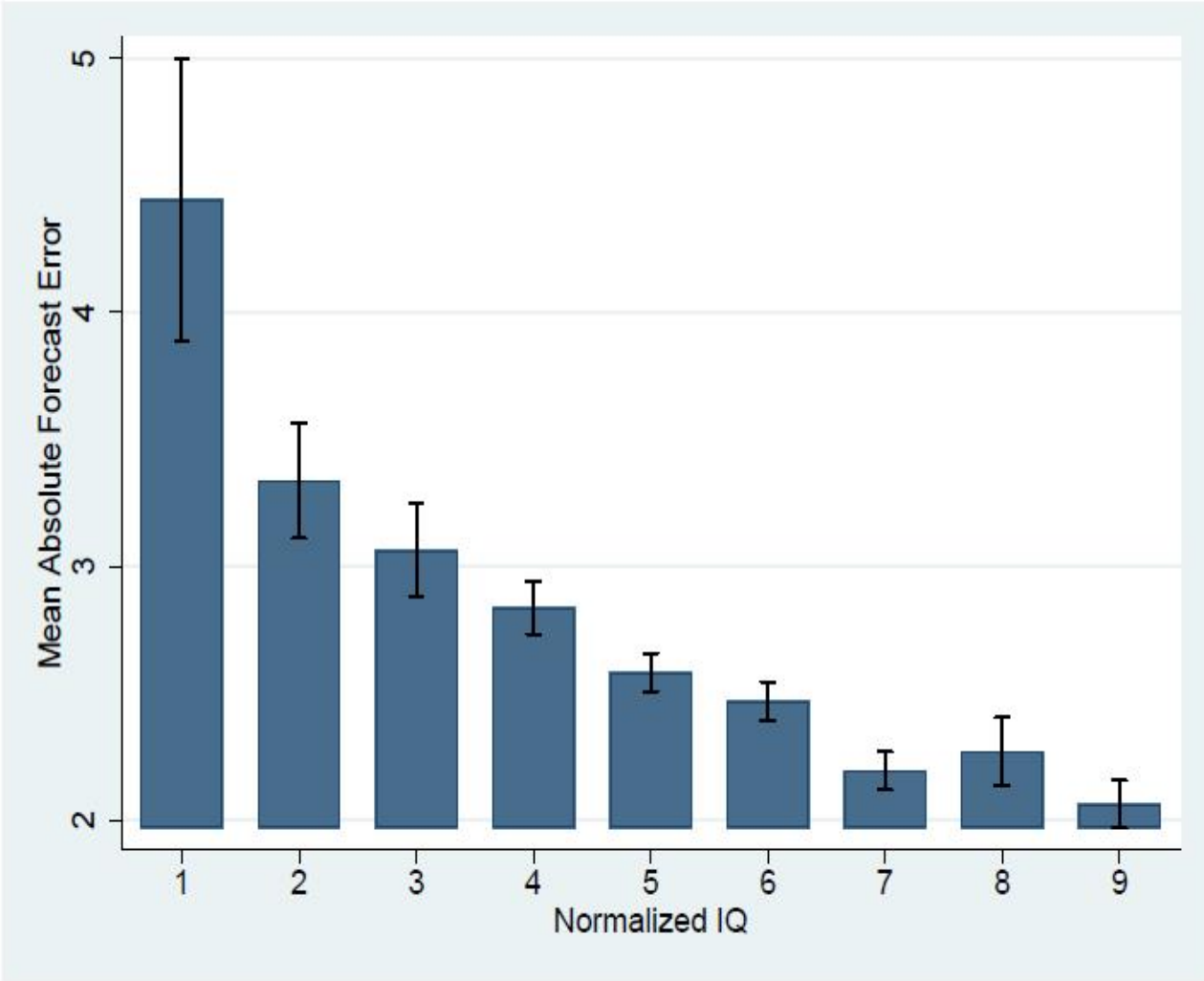


Figure 2: Rounding and Implausible Values for Inflation Expectations by IQ

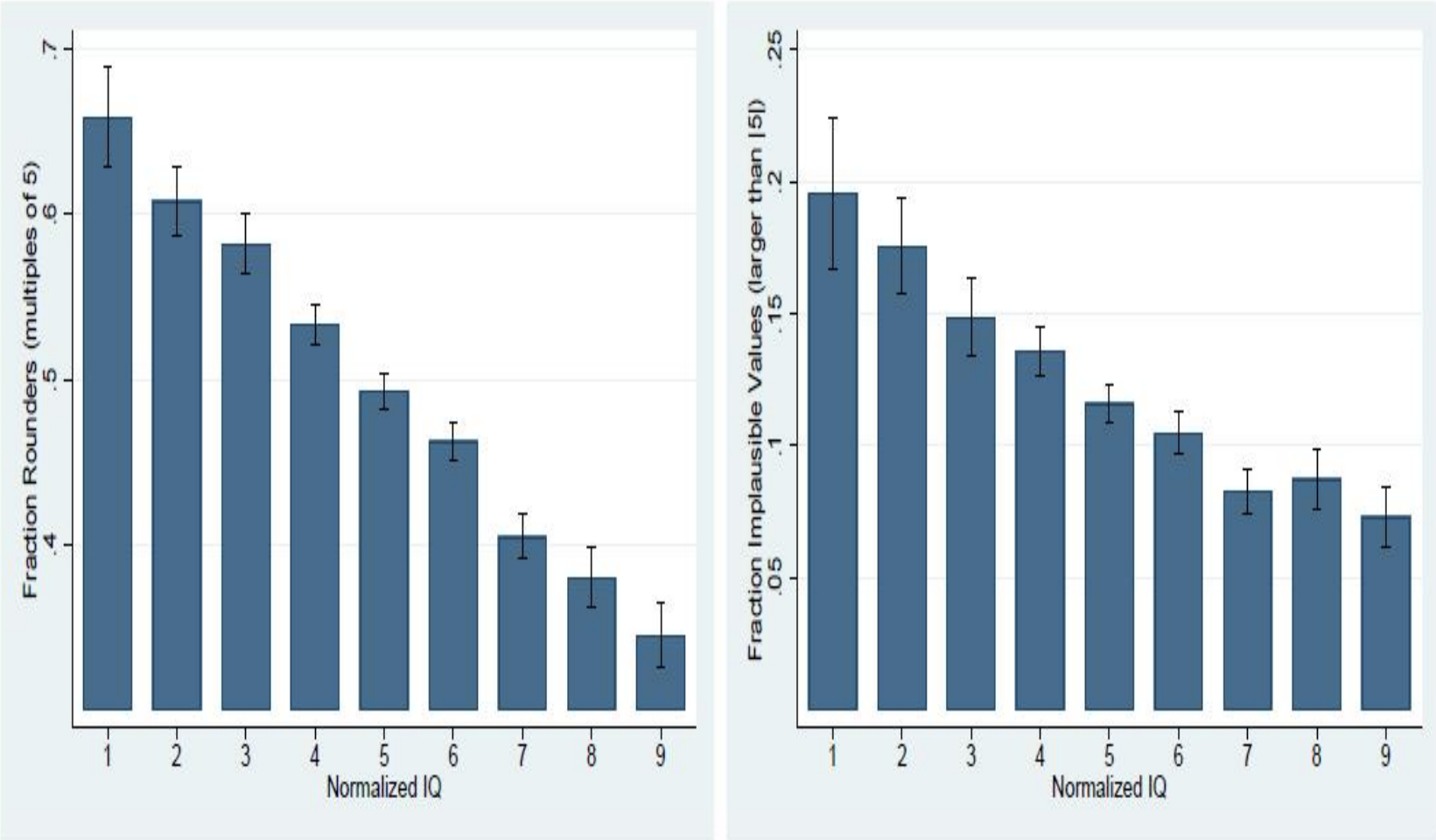


Figure 5: **Dispersion of Forecasts of Inflation by IQ**

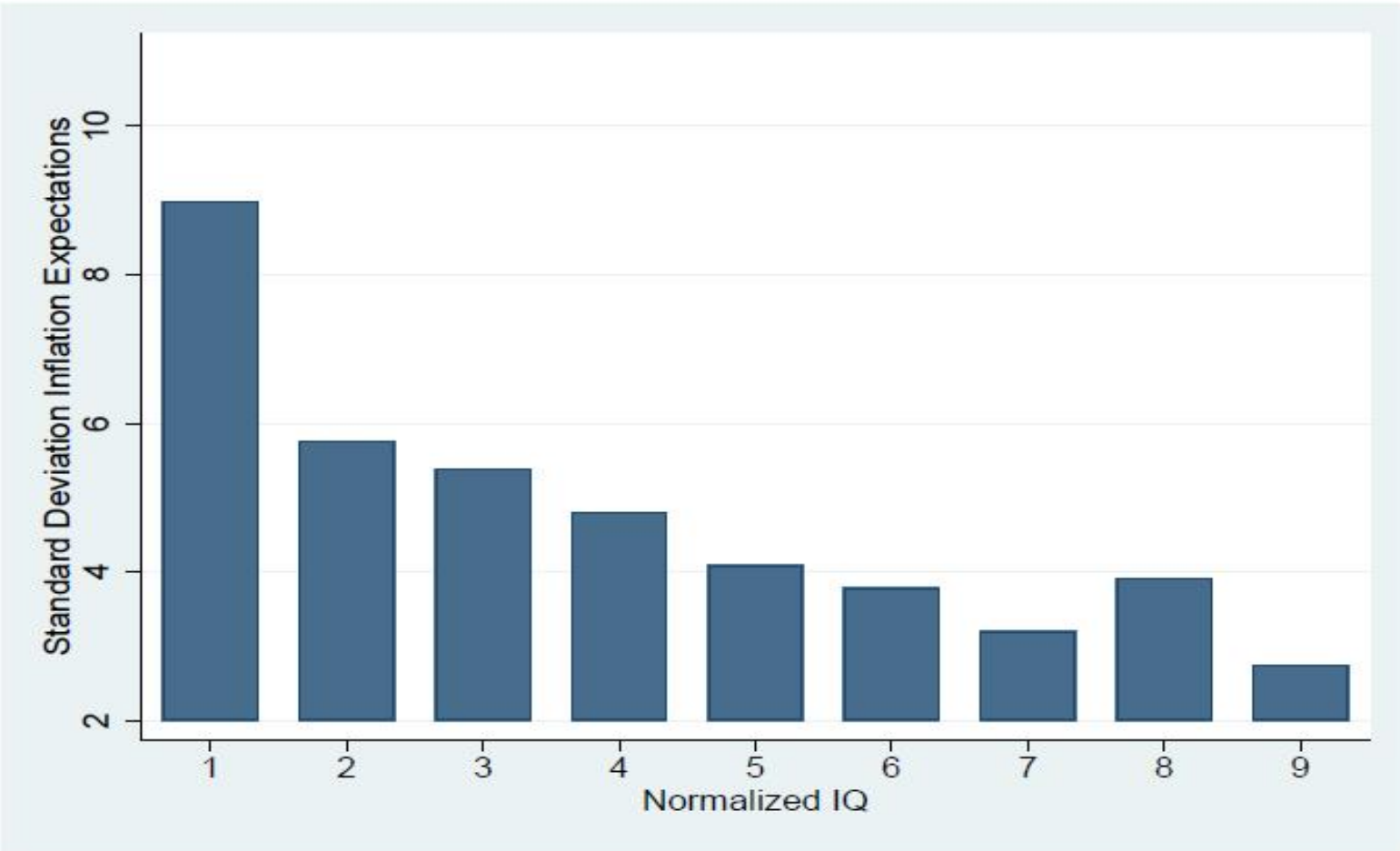
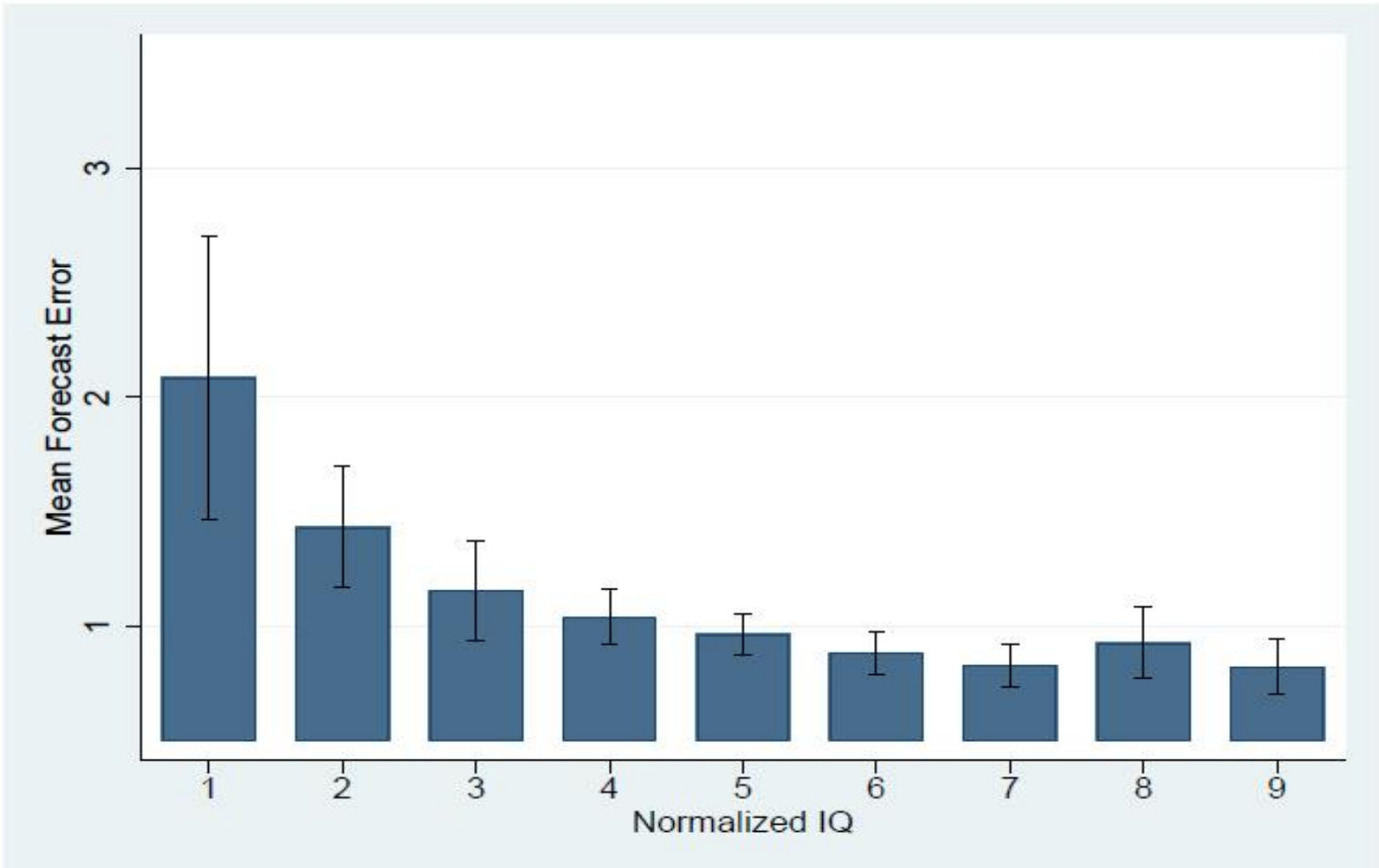
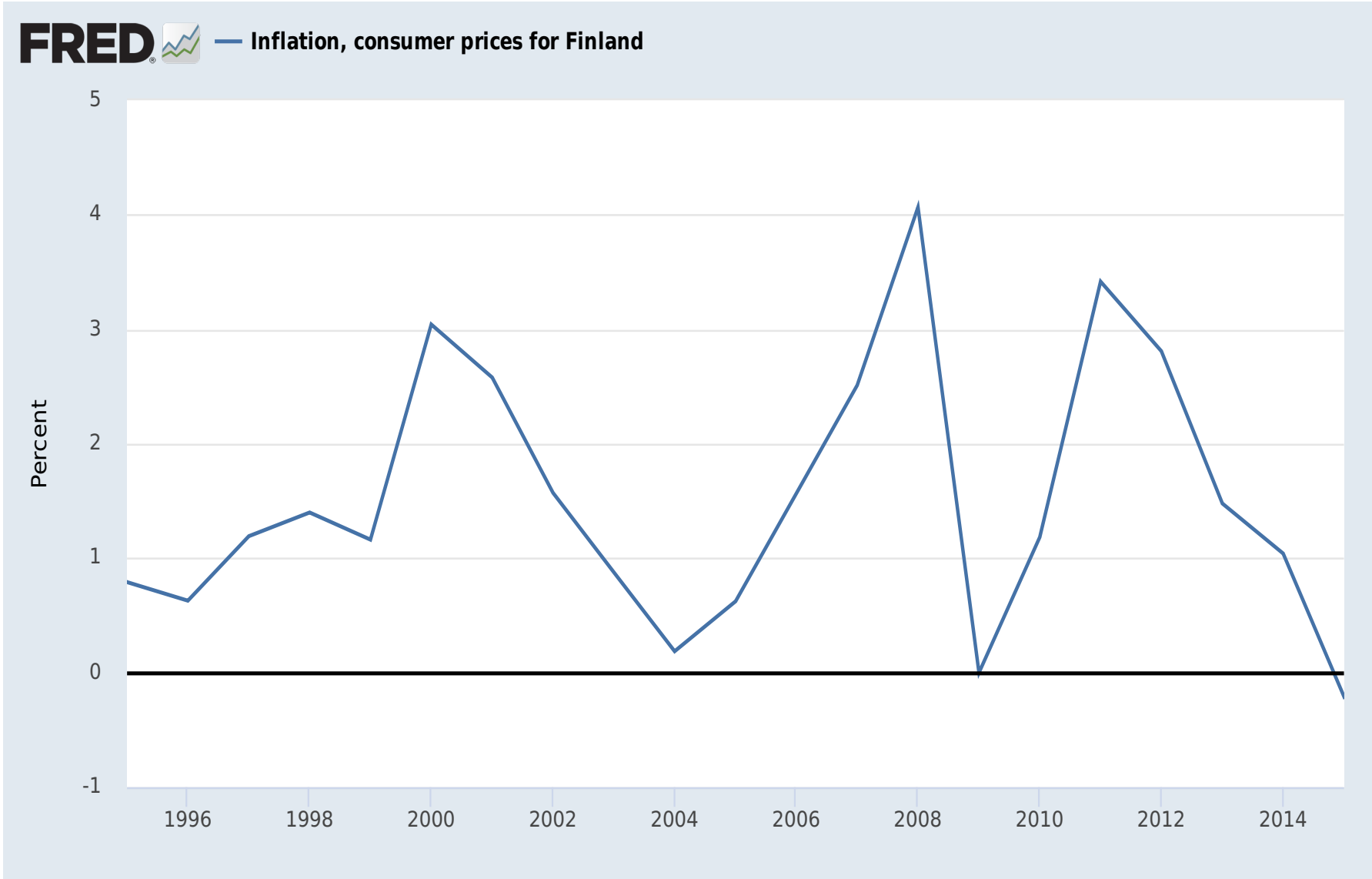


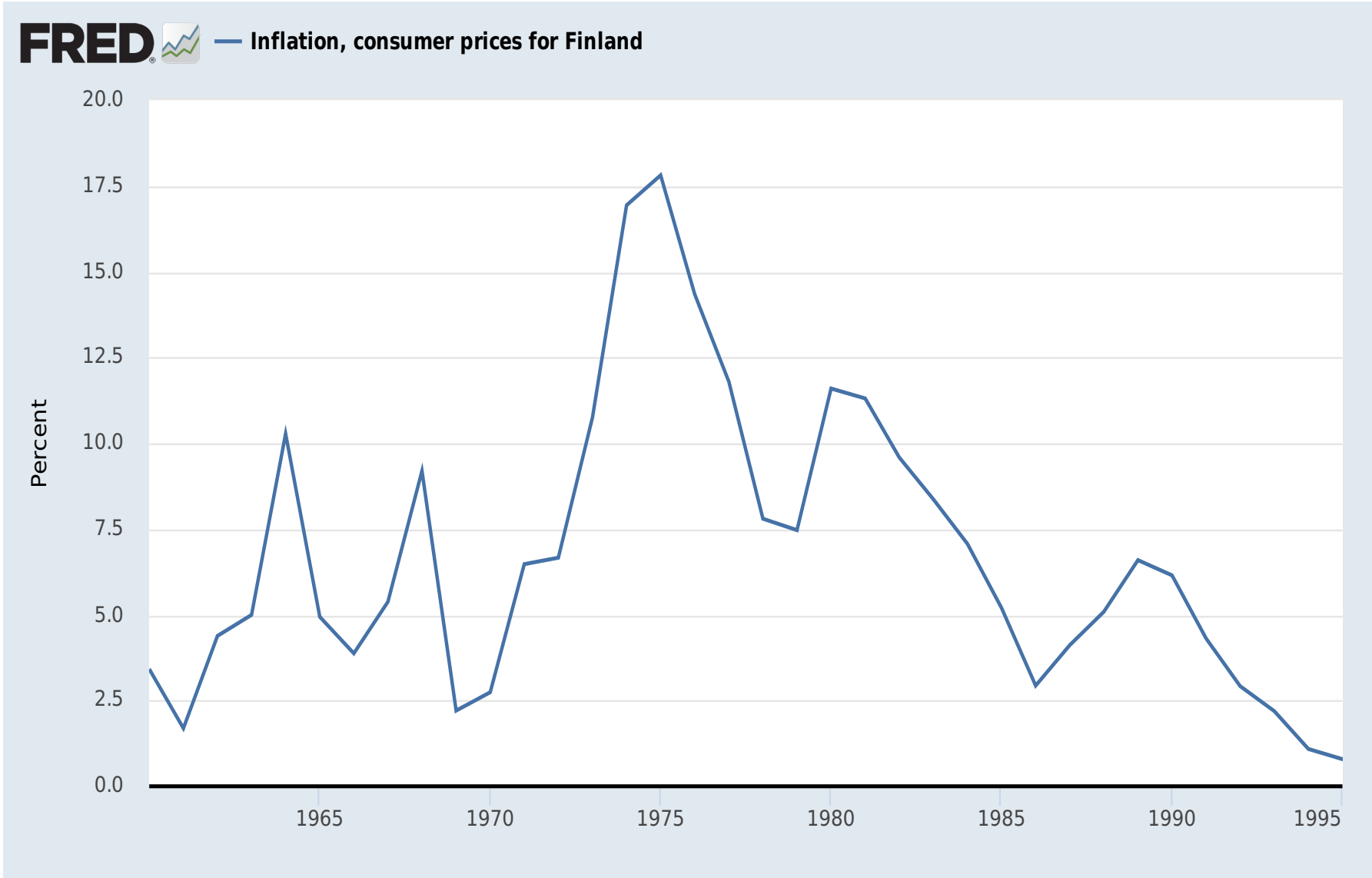
Figure 3: **Average Forecast Error by IQ**



Observations

- Expectations monotonically improve for higher IQ bins
  - Doesn't go away conditioning on other observables (education, income, etc)
- For mean and dispersion, really big difference going from lowest bin to the next lowest
- Expectations still not exactly "good" even for high IQ types
- From 1995-2015 in Finland:
  - Average inflation of 1.51 percent
  - Standard deviation of 1.15 percent
- Would be interesting to go back further in time. 1960-1995:
  - Average inflation of 6.73 percent
  - Standard deviation of 4.25 percent


FRED
Inflation, consumer prices for Finland
Percent
5
4
3
2
1
0
-1
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
Source: World Bank
myf.red/g/nUnS


FRED
Inflation, consumer prices for Finland
Percent
20.0
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
1965
1970
1975
1980
1985
1990
1995
Source: World Bank
myf.red/g/nUos

A Couple of Suggestions

- Plot time series for different levels of aggregation with actual realized inflation
- Rounding and decimals. Instead of rounding to multiples of 5, what about round numbers versus decimals?

IQ and Choice

- The second part of the paper relates expectations to choice
- Two parts here, but I'm going to focus on intertemporal substitution
- Basic framework is a linearized consumption Euler equation:

$$\mathbb{E}_t\, c_{t+1} - c_t = \sigma\left(i_t - \mathbb{E}_t\, \pi_{t+1}\right)$$

- Basic idea:
  - Cross-sectional variation in inflation expectations provides cross-sectional variation in ex-ante real interest rate
  - Projecting consumption, or consumption growth, onto inflation expectations may give you some idea about EIS
- Similar to Burke and Ozdagli (2013, WP); Bachmann, Berg, and Sims (2015, *AEJ Policy*); Crump, Eusepi, Tambalotti, and Topa (2019, WP)

Empirical Specification

$$D_{i,t} = \alpha + \beta \pi^{e}_{i,t+1} + \mathbf{X}_{i,t}\gamma + e_{i,t}$$

- Where:
  - $D_{i,t}$: dummy variable for good or bad time to buy durable goods
  - π^{e}_{t+1}: *qualitative* inflation expectations. "Accelerationist" measure of expected inflation
  - $\mathbf{X}_{i,t}$: controls (including time effects)
- Pooled cross-sections
- Run the regression for different IQ bins
- Null hypothesis: $\widehat{\beta} > 0$

Results and Issues

- $\widehat{\beta}$: positive and significant *only* for high IQ men
  - Otherwise negative and statistically/economically insignificant (Bachmann, Berg, and Sims 2015 and Burke and Ozdagli 2013)
  - Some evidence that economic education influences this
- Issues:
  1. LHS is (i) durable goods and (ii) qualitative
     - How does qualitative measure correlate with actual spending?
  2. RHS is not point estimate of expected inflation, but rather qualitative indicator
     - Potentially good reason to do it this way (D'Acunto, Hoang, and Weber 2018)
     - But what are results if you just use actual expected inflation? Particularly for high IQ types?
     - How do we interpret magnitudes? *Not* estimating EIS (Crump, Eusepi, Tambalotti, and Topa 2018)
  3. Would/should relationship between π^e_{t+1} and spending attitudes change at ZLB?

What do we do with this?

- A lot of "puzzles" in macro models arise because (i) expectations are very forward-looking and (ii) intertemporal substitution is at heart of model
  - Large government spending multipliers at ZLB (Christiano, Eichenbaum, and Rebelo 2011)
  - Contractionary productivity shocks (Garin, Lester, and Sims 2019; Wieland 2019)
  - Neo-Fisherian effects (Garin, Lester, and Sims 2018)
  - Forward guidance puzzle (Del Negro, Giannoni, and Patterson 2015)
- I read this paper as being consistent with some of this literature
  - For most people, expectations are not that good and intertemporal substitution not that important

HANK and TANK

- Recent HANK literature introduces varying degrees of heterogeneity/credit constraints into NK models
  - McKay, Nakamura, Steinsson (2016); Kaplan, Moll, Violante (2018); Auclert, Rognlie, and Straub (2019)
  - Incomplete markets, agents subject to occasionally binding borrowing constraints
  - Intertemporal substitution much less important
- Related to TANK literature
  - Campbell and Mankiw (1989); Derbotoli and Gali (2017)

SHANK

- This paper – *Stupid Heterogeneous Agent New Keynesian Model* (SHANK)
- Do we need to model people with different cognitive abilities?
- This paper seems to suggest cognitive abilities matter above and beyond other sources of heterogeneity
- Would this be all that different from TANK?