Inflation at the Household Level

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PANEL ON IMPROVING COST-OF-LIVING INDEXES AND CONSUMER INFLATION STATISTICS IN THE DIGITAL AGE

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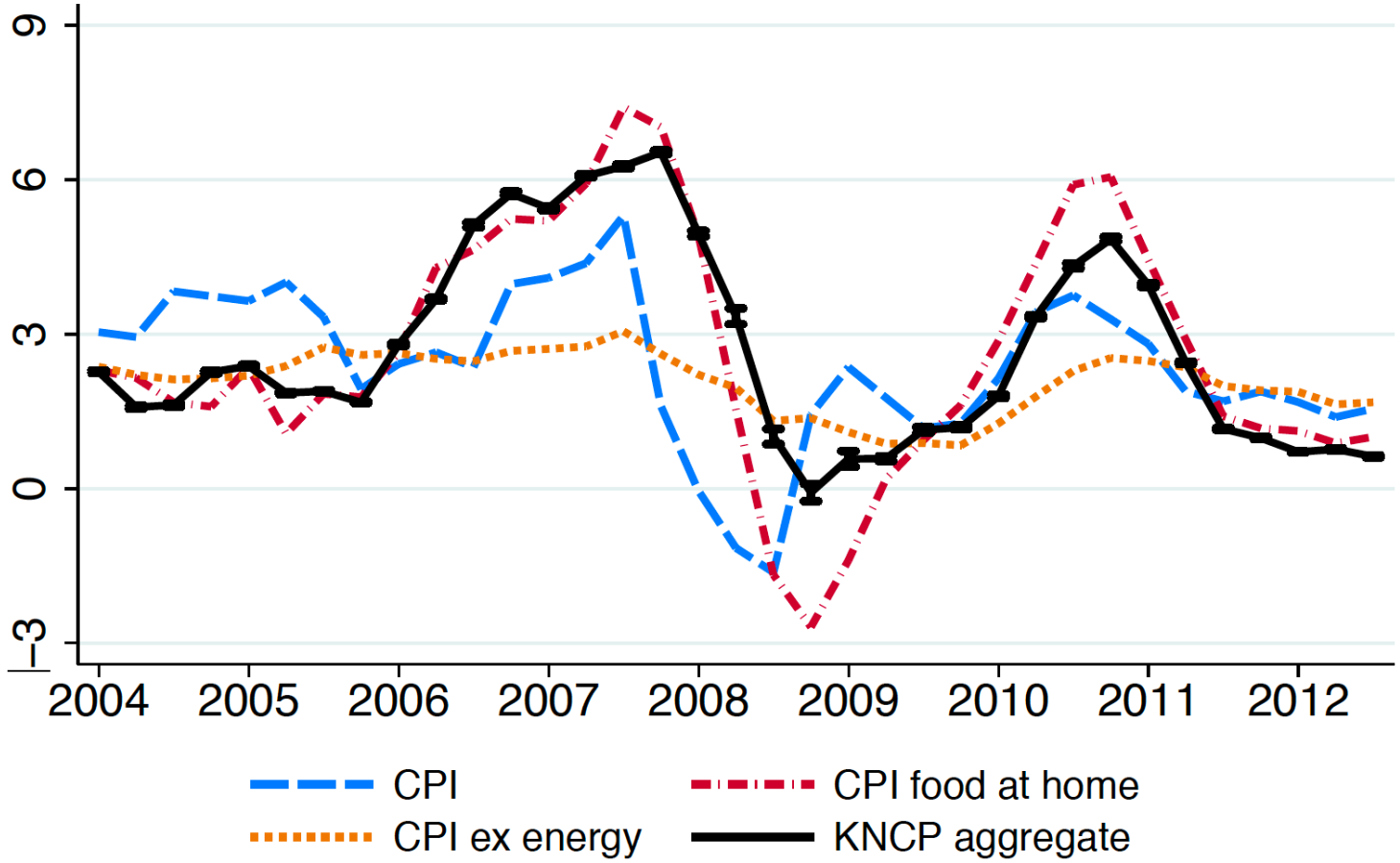
Data

- Kilts-Nielsen Consumer Panel (KNCP) — 50,000 households.
- Consumption of **goods with barcodes**.
  - Mostly food, but does capture items from most non-services CPI categories.
- Each shopping trip (including online): barcode and price of each item purchased.
- Choices we make:
  - Define *household's consumption bundle* at quarterly frequency.
  - Measure change in *household's price* for each good between two quarters one year apart.
  - Exclude households with < 5 matched barcodes.

Three ways to construct household inflation indexes

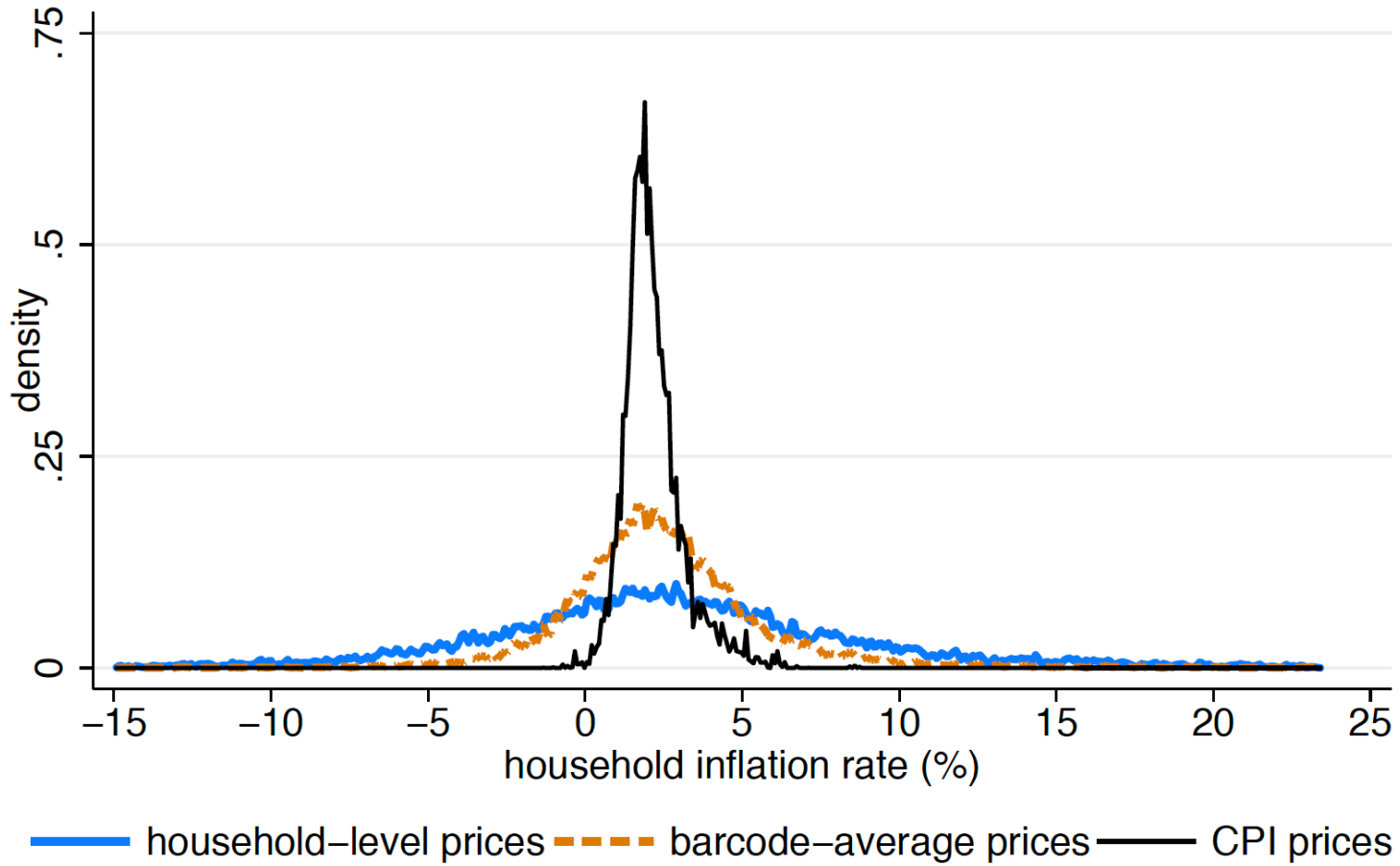
- **Household-level prices:**
  - Household's consumption bundle at barcode level.
  - Household's price paid for each barcode.
- **Barcode-average prices:**
  - Household's consumption bundle at barcode level.
  - National average price paid for each barcode.
- **CPI prices:**
  - Household's consumption bundle at level of broad categories.
  - Item stratum price indexes from CPI.
  - Comparable to previous literature.
- All of this can be done with whatever inflation index you like (Laspeyres, Paasche, etc.). I'll show Laspeyres; others very similar.

Inflation rates with CPI vs. KNCP bundles



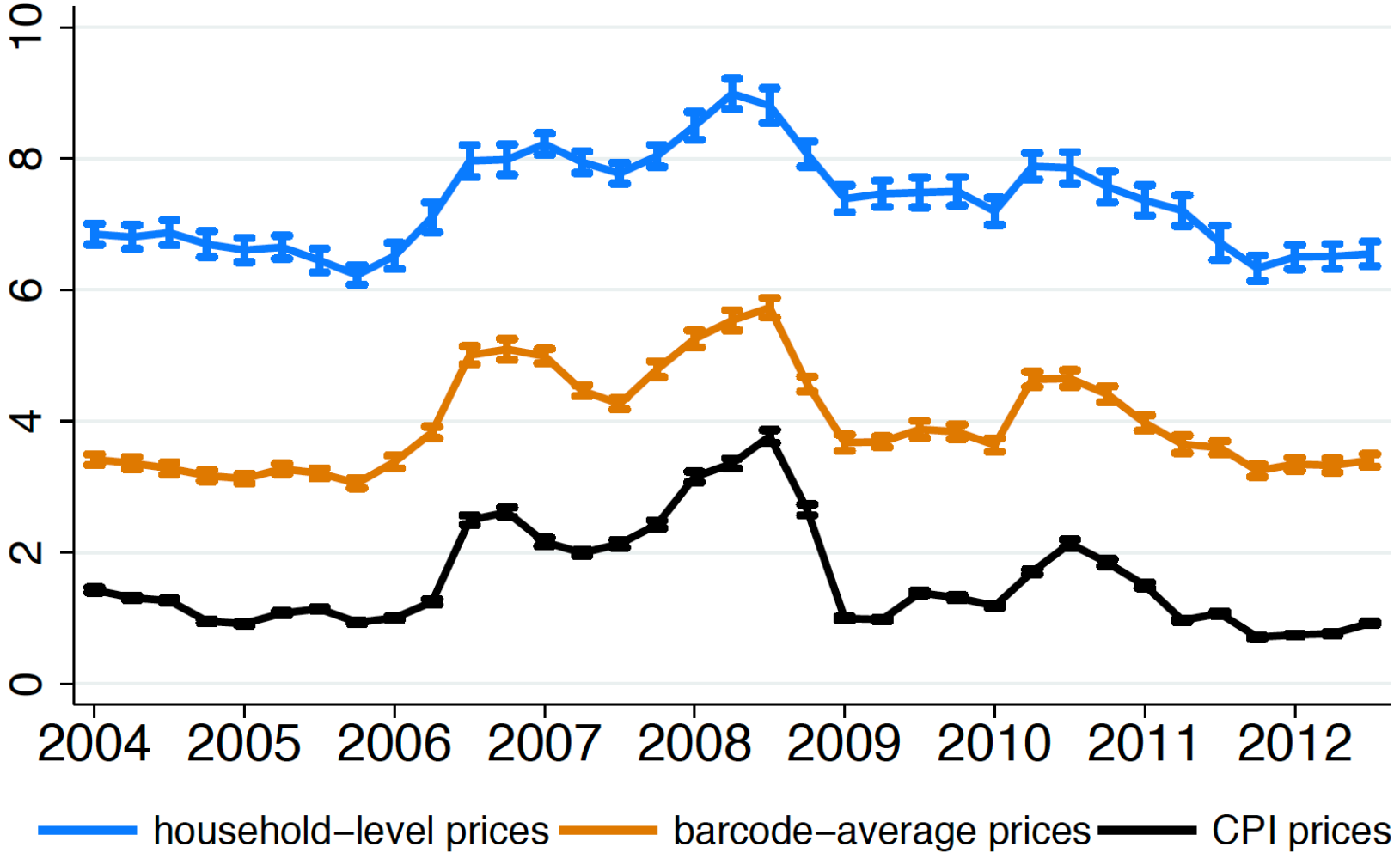
All indexes use CPI prices.

CPI prices miss most of the heterogeneity

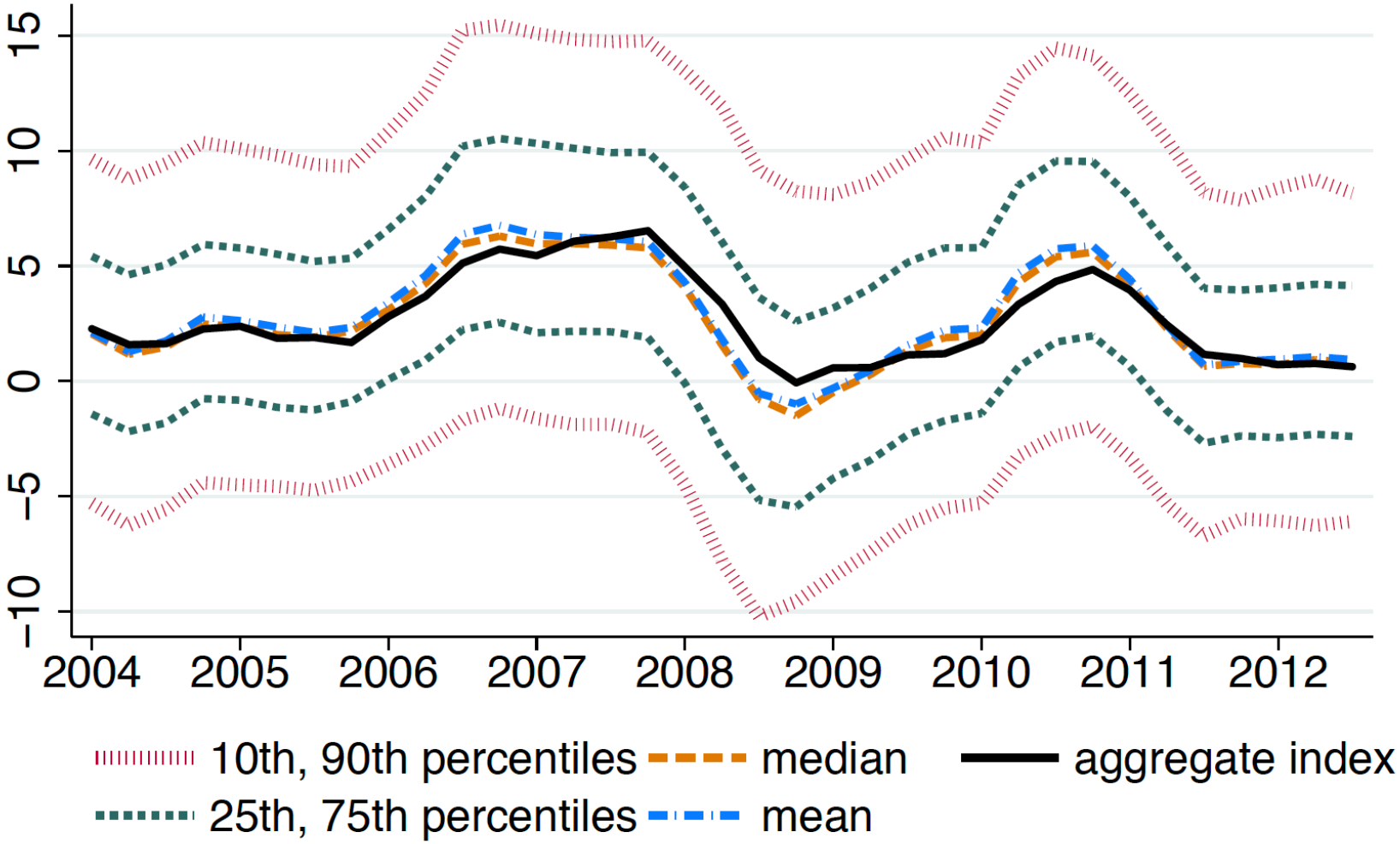


Inflation from 2004q4 to 2005q4

Interquartile range of inflation rates



Distribution shifts in parallel with aggregate inflation



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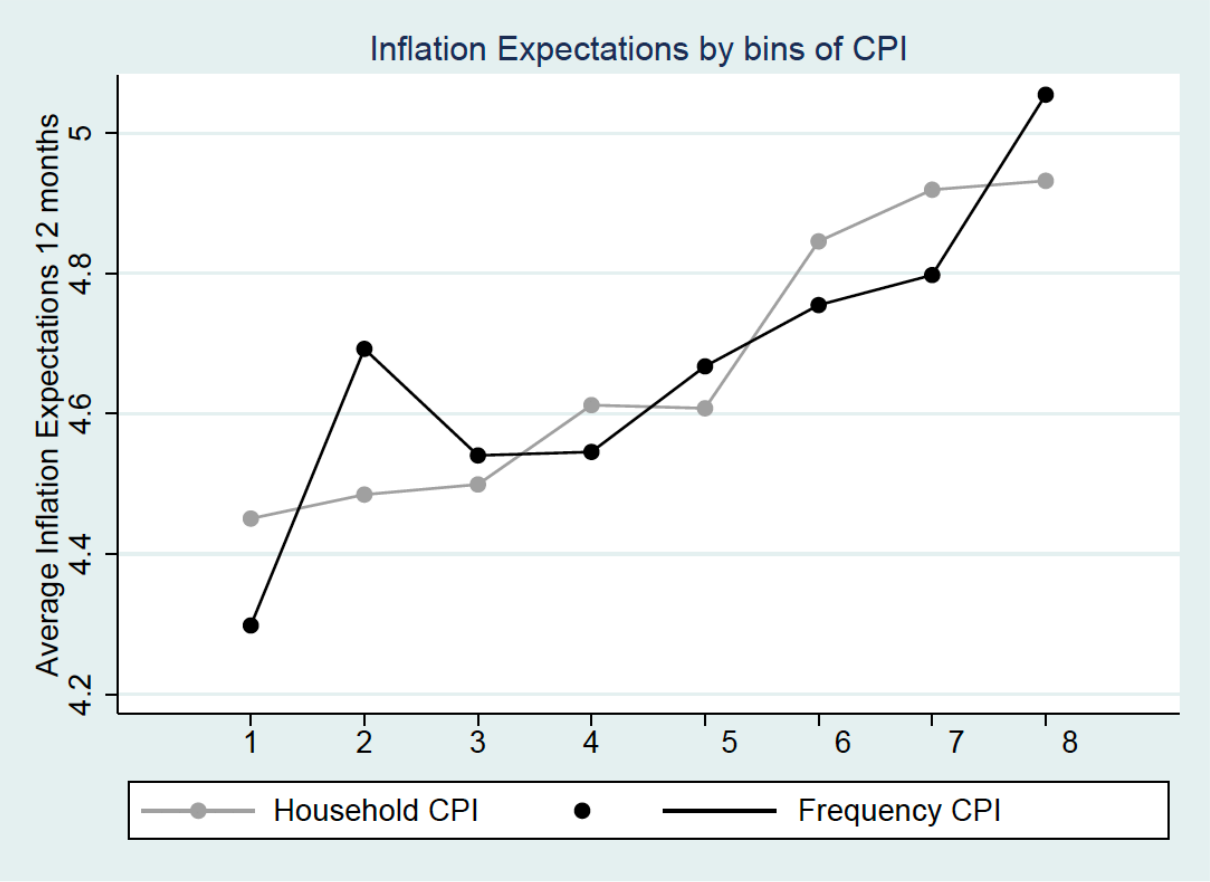
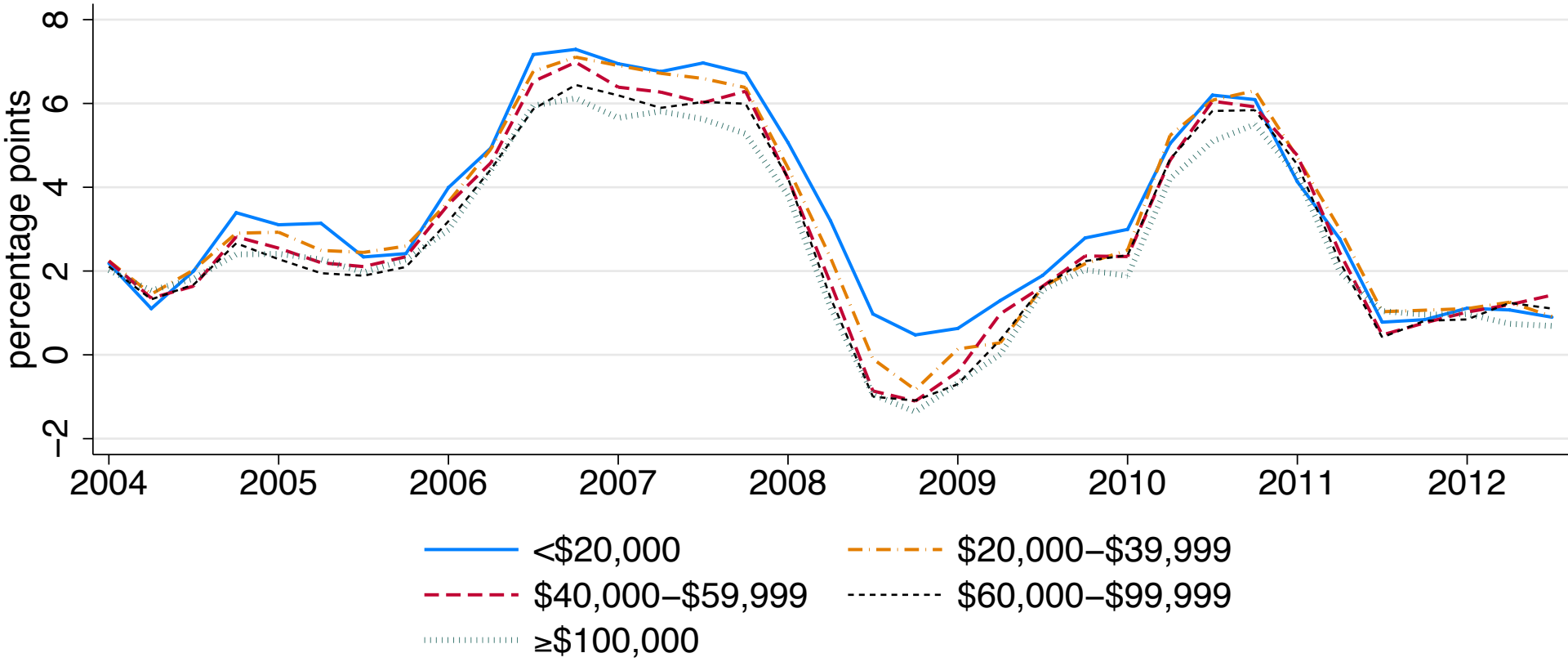
Realized inflation predicts expected inflation

Panel B. Grocery Shopping and Inflation Expectations



- Source: D'Acunto, Malmendier, Ospina and Weber (2020)

Low-income households have higher inflation (1) Household-level prices



- 2004-2012 average annual difference between top and bottom groups: 0.80 pp
- 2004-2012 cumulative price difference between top and bottom groups: 8.5 p.p

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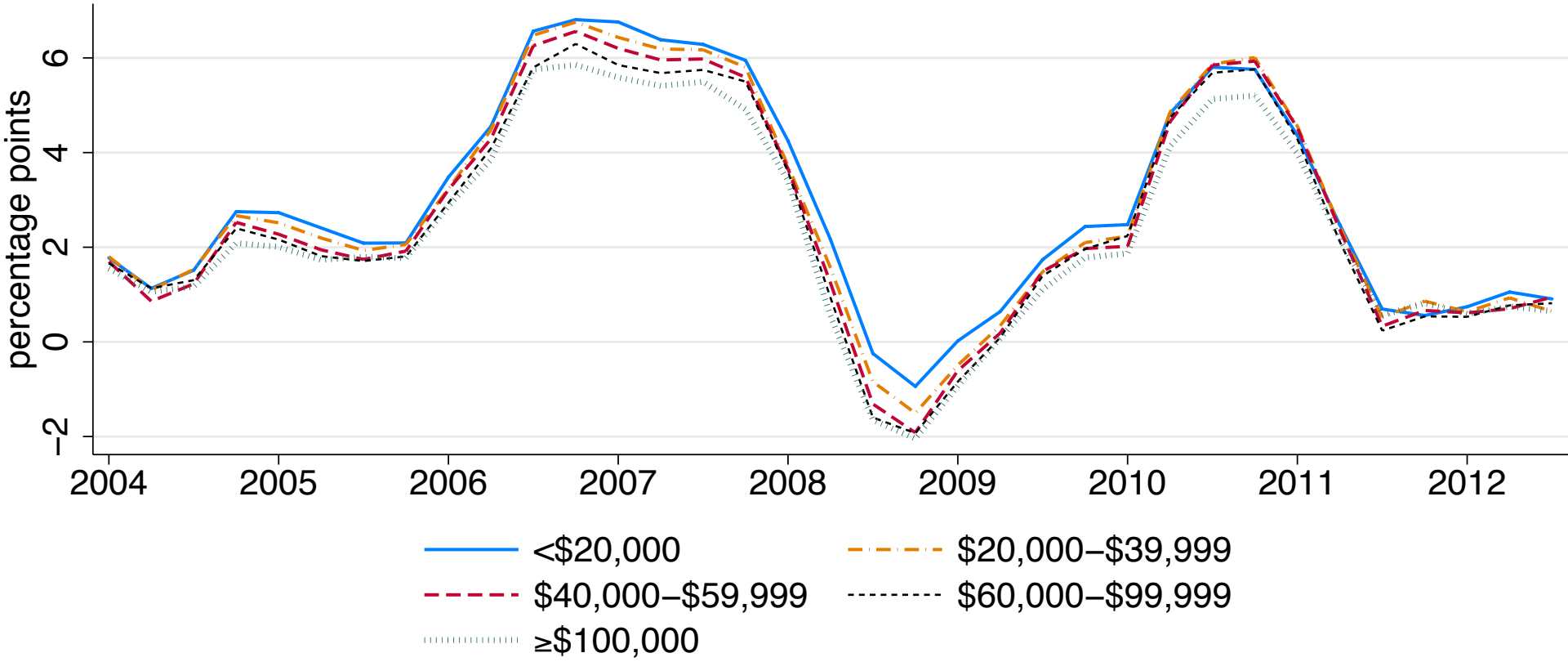
Low-income households have higher inflation (2) Barcode-average prices



- 2004-2012 average annual difference between top and bottom groups: 0.64 pp
- 2004-2012 cumulative price difference between top and bottom groups: 6.7 p.p

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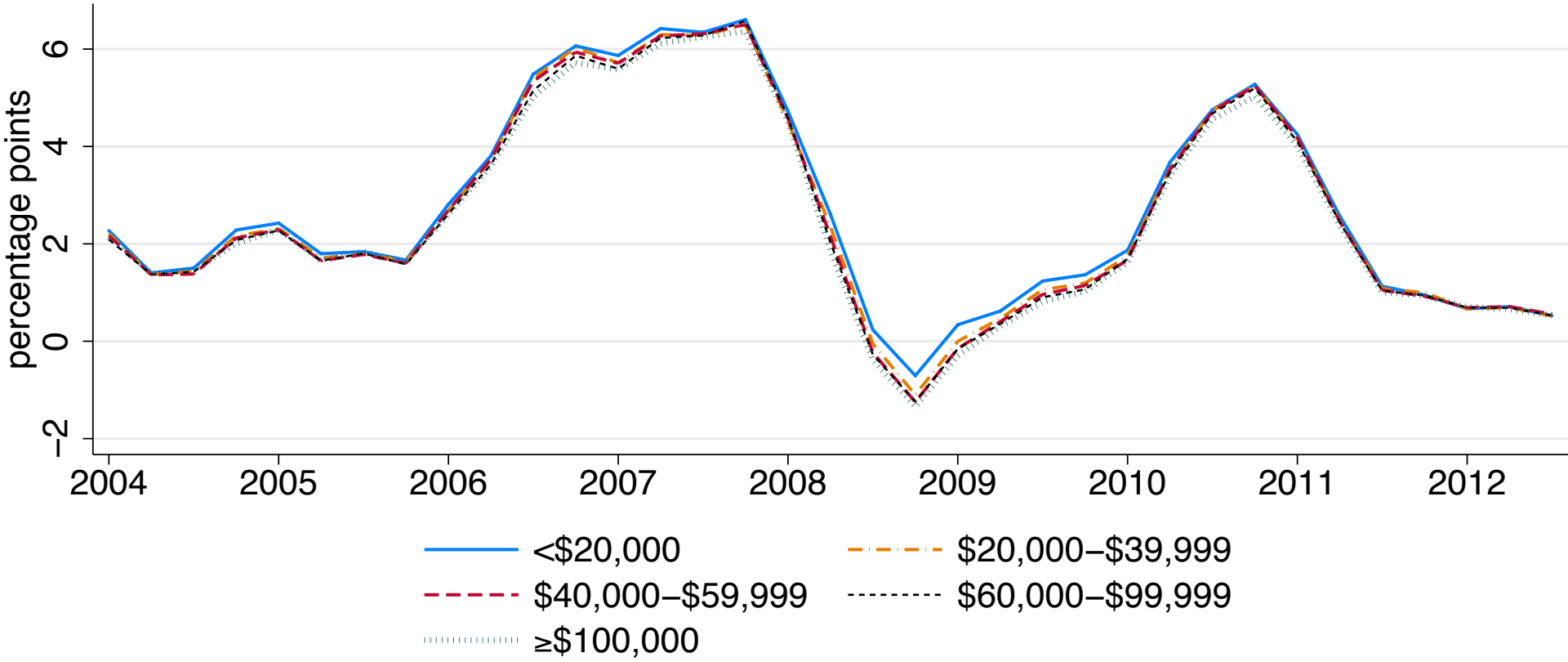
Low-income households have higher inflation
(3) CPI stratum prices



- 2004-2012 average annual difference between top and bottom groups: 0.25 pp
- 2004-2012 cumulative price difference between top and bottom groups: 2.6 p.p

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But demographics explain very little

- Regress $\pi^L_{it,t+4}$ on large vector of demographics:
  - Household income
  - Age of head(s)
  - Education of head(s)
  - Region
  - Household size and composition
  - Race
- Control for time dummies.
- R-squared is tiny:
  - Time dummies only: $R^2 = 0.009$.
  - Time dummies plus all demographics: $R^2 = 0.012$.

Low-income households have about 1% higher inflation per year