Selective Inattention to Interest Rates

Pierfrancesco Mei
Harvard → Goldman Sachs
pierfrancescomei.com

Tim de Silva
Stanford GSB & SIEPR
timdesilva.me

August 2025

Motivation

- Households' macro expectations suggest they are very uninformed on **average**
  - Level of expectations is often systematically biased Weber et al. 22
  - Substantial dispersion in expectations across people Mankiw et al. 04
  - Errors in their expectations are predictable ex-ante Bordalo et al. 20

- Motivated adding information frictions to quantitative macro models Auclert et al. 20
  - $\Rightarrow$ **Average** expectation is slow-moving and under-reacts Coibion-Gorodnichenko 12, 15
  - $\Rightarrow$ Aggregate responses to shocks are "hump-shaped", like in data Christiano et al. 05

Motivation

- Households' macro expectations suggest they are very uninformed on **average**
  - Level of expectations is often systematically biased Weber et al. 22
  - Substantial dispersion in expectations across people Mankiw et al. 04
  - Errors in their expectations are predictable ex-ante Bordalo et al. 20
- Motivated adding information frictions to quantitative macro models Auclert et al. 20
- Introspection: macro expectations much more important for "**big**" decisions
  - These **big** decisions also tend to occur less frequently
  - Example: interest rates important when **buying a house**, but less so for groceries

Motivation

- Households' macro expectations suggest they are very uninformed on **average**
  - Level of expectations is often systematically biased Weber et al. 22
  - Substantial dispersion in expectations across people Mankiw et al. 04
  - Errors in their expectations are predictable ex-ante Bordalo et al. 20
- Motivated adding information frictions to quantitative macro models Auclert et al. 20
- Introspection: macro expectations much more important for "**big**" decisions
- **Question**: Do HHs **select** into paying attention based on **types** of decisions?

Motivation

- Households' macro expectations suggest they are very uninformed on **average**
  - Level of expectations is often systematically biased Weber et al. 22
  - Substantial dispersion in expectations across people Mankiw et al. 04
  - Errors in their expectations are predictable ex-ante Bordalo et al. 20
- Motivated adding information frictions to quantitative macro models Auclert et al. 20
- Introspection: macro expectations much more important for "**big**" decisions
- **Question**: Do HHs **select** into paying attention based on **types** of decisions?
- **If yes**, how does this **selection** affect the transmission of shocks?
  - Belief heterogeneity $\Rightarrow$ **average** may not be the relevant object Miller 77, Afrouzi et al. 24

This Paper

Is there selective inattention to interest rates based on **durables purchases**?

"decision-making" (DM)

1. Use existing surveys to study how interest rate expectations differ based on DM
   - Benefit: high-quality data on expectations
   - Cost: imprecise identification of **DM status** + hard to isolate attention

This Paper

Is there selective inattention to interest rates based on **durables purchases**?

"decision-making" (DM)

1. Use existing surveys to study how interest rate expectations differ based on DM
2. Conduct a new survey to identify how macro attention changes based on DM
   - Benefit: better identify **DM status** + elicit information acquisition directly
   - Cost: hard to study accuracy in expectations given one cross-section

This Paper

~~Is there selective inattention to interest rates based on durables purchases?~~ ✓

How does selective inattention affect **aggregate responses** to interest rates?

1. Use existing surveys to study how interest rate expectations differ based on DM
2. Conduct a new survey to identify how macro attention changes based on DM
3. Develop incomplete markets model with $\overbrace{\text{durables}}^{\text{DM in model}}$ + rational inattention to rates
   - Use patterns in IA from survey to discipline information cost parameter
   - Compare **model IRFs** to level and volatility of rates with $\underbrace{\text{exogenous inattention}}_{\text{DM} \perp \text{beliefs} \Rightarrow \text{no selection}}$

Summary of Results

Is there selective inattention to interest rates based on durables purchases?

1. Interest rate expectations of decision-makers are **more accurate**
   - Absolute nowcast and forecast errors are 40% lower
   - Dispersion of beliefs is 70% lower and subjective uncertainty decreases
   - Improvement in accuracy is weaker/absent for other macro variables

Summary of Results

Is there selective inattention to interest rates based on durables purchases?

1. Interest rate expectations of decision-makers are **more accurate**
   - Absolute nowcast and forecast errors are 40% lower
   - Dispersion of beliefs is 70% lower and subjective uncertainty decreases
   - Improvement in accuracy is weaker/absent for other macro variables
2. Information acquisition is **concentrated** prior to purchases
   - Purchase in $\leq$ 6 months $\Rightarrow$ twice as likely to acquire information
   - Information acquisition focuses on current values of decision-relevant rates

Summary of Results

How does selective inattention affect **aggregate responses** to interest rates?

3. **Like** exogenous inattention, selective inattention generates:
   - Aggregate beliefs that are slow-moving and underreact
   - Sluggish responses of non-durable consumption responds to rate changes

Summary of Results

How does selective inattention affect **aggregate responses** to interest rates?

3. **Like** exogenous inattention, selective inattention generates:
   - Aggregate beliefs that are slow-moving and underreact
   - Sluggish responses of non-durable consumption responds to rate changes

4. **Unlike** exogenous inattention, selection implies that **rate cuts** generate:
   - Larger fraction of aggregate spending responses from durables
   - Accelerated increases in durables and non-durables for large cuts

Summary of Results

How does selective inattention affect **aggregate responses** to interest rates?

3. **Like** exogenous inattention, selective inattention generates:
   - Aggregate beliefs that are slow-moving and underreact
   - Sluggish responses of non-durable consumption responds to rate changes

4. **Unlike** exogenous inattention, selection implies that **rate cuts** generate:
   - Larger fraction of aggregate spending responses from durables
   - Accelerated increases in durables and non-durables for large cuts

5. **Unlike** exogenous inattention, selection implies that **more volatility** causes:
   - Beliefs to update more frequently

Summary of Results

How does selective inattention affect **aggregate responses** to interest rates?

3. **Like** exogenous inattention, selective inattention generates:
   - Aggregate beliefs that are slow-moving and underreact
   - Sluggish responses of non-durable consumption responds to rate changes

4. **Unlike** exogenous inattention, selection implies that **rate cuts** generate:
   - Larger fraction of aggregate spending responses from durables
   - Accelerated increases in durables and non-durables for large cuts

5. **Unlike** exogenous inattention, selection implies that **more volatility** causes:
   - Beliefs to update more frequently $\Rightarrow$ total spending falls by less, closer to data

Summary of Results

How does selective inattention affect **aggregate responses** to interest rates?

3. **Like** exogenous inattention, selective inattention generates:
   - Aggregate beliefs that are slow-moving and underreact
   - Sluggish responses of non-durable consumption responds to rate changes

4. **Unlike** exogenous inattention, selection implies that **rate cuts** generate:
   - Larger fraction of aggregate spending responses from durables
   - Accelerated increases in durables and non-durables for large cuts

5. **Unlike** exogenous inattention, selection implies that **more volatility** causes:
   - Beliefs to update more frequently $\Rightarrow$ total spending falls by less, closer to data
   - Consumption to become more (not less) sensitive to rates

Summary of Results

How does selective inattention affect **aggregate responses** to interest rates?

3. **Like** exogenous inattention, selective inattention generates:
   - Aggregate beliefs that are slow-moving and underreact
   - Sluggish responses of non-durable consumption responds to rate changes

4. **Unlike** exogenous inattention, selection implies that **rate cuts** generate:
   - Larger fraction of aggregate spending responses from durables
   - Accelerated increases in durables and non-durables for large cuts

5. **Unlike** exogenous inattention, selection implies that **more volatility** causes:
   - Beliefs to update more frequently $\Rightarrow$ total spending falls by less, closer to data
   - Consumption to become more (not less) sensitive to rates

▸ Literature

Outline

1. Existing Surveys: Expectations Accuracy around Decision-Making
2. New Survey: Information Acquisition around Decision-Making
3. Incomplete Markets Model with Selective Inattention
4. Interest Rate Passthrough with Selective Inattention
5. Conclusion

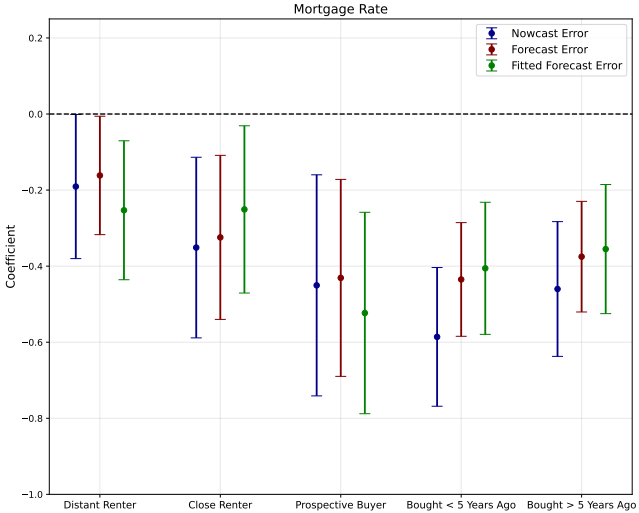
Outline

Survey 1/2: NY Fed Survey of Consumer Expectations

- **Sample**: repeated cross-section of $\sim$ 8K respondents in 2014-2023
- Variables of interest:
  1. **Nowcasts** of current average 30-year fixed mortgage rate
  2. **Forecasts** of one-year ahead mortgage rate and inflation
  3. **DM status** based on distance from past or (intended) future home purchase
- Construct errors using 30-year fixed rate in Freddie Mac PMMS and CPI
- Run the following regression:

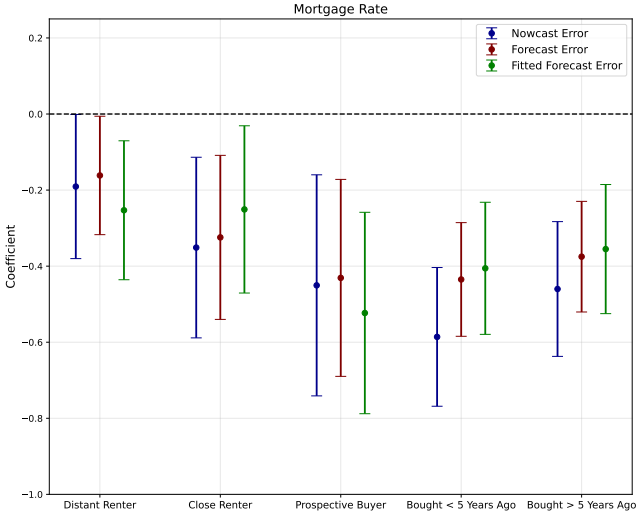
$$\log |\text{Error}_{it}| = \sum_s \beta_s \cdot \mathbf{1}\left(\text{DM Status}_{it} = s\right) + \text{Controls}_{it} + \delta_t + \epsilon_{it}$$

Decision-Makers Have More Accurate Beliefs



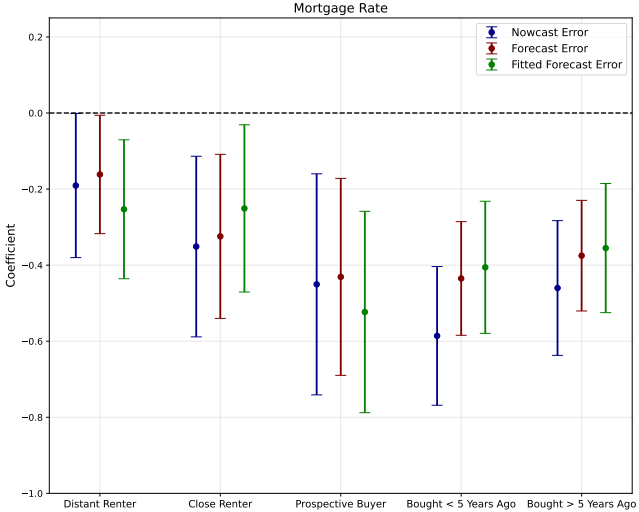
Errors of prospective buyers $\approx$ **40% lower** than those with no purchase plan

Decision-Makers Have More Accurate Beliefs



≈ **2x** difference between individuals in top and bottom terciles of income or education

Decision-Makers Have More Accurate Beliefs



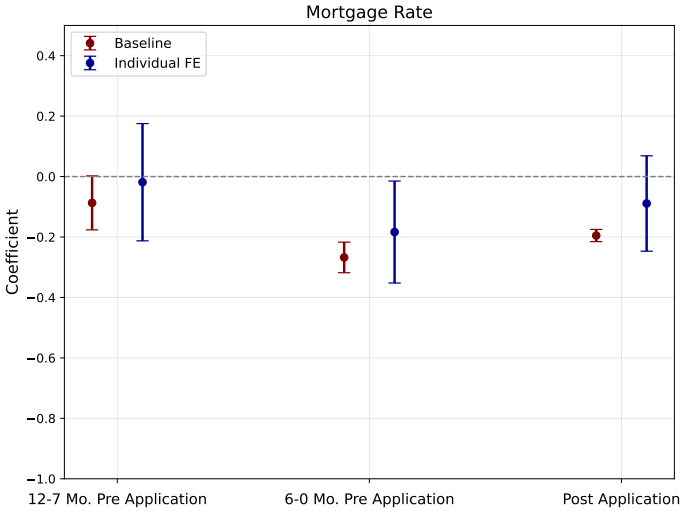
Almost all of forecasting gain comes from nowcasting improvement

Survey 2/2: ECB Survey of Consumer Expectations

- **Sample**: **panel** of $\sim$ 130K individuals in 2020-2024 from six largest countries
  - Restriction: only include individuals who rented at some point in survey
  - Note: quarterly frequency $\Rightarrow$ short panel
- Variables of interest:
  1. **Forecasts** of one-year ahead mortgage rates, inflation, GDP, and unemployment
  2. **DM status** based on distance from mortgage application
- Construct errors based on country-specific realizations
- Run the following regression:

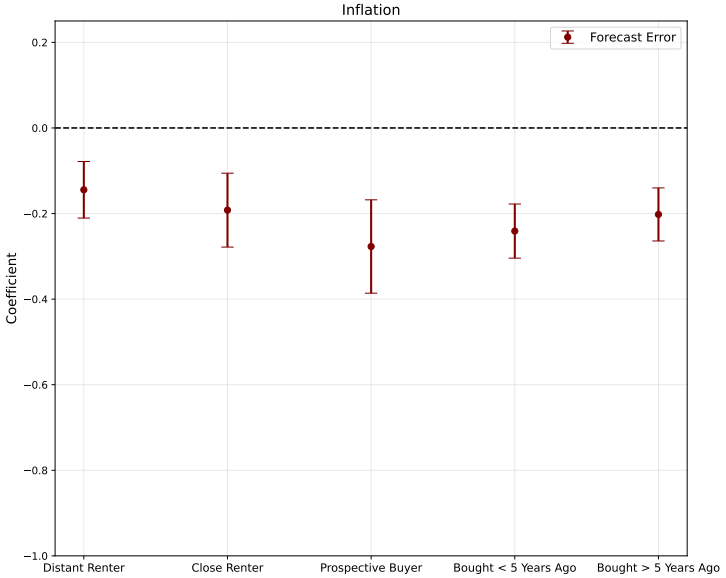
$$\log |\text{Error}_{it}| = \sum_s \beta_s \cdot \mathbf{1}\left(\text{DM Status}_{it} = s\right) + \text{Controls}_{it} + \textbf{Tenure}_{it} + \delta_t + \lambda_{\mathbf{i}} + \epsilon_{it}$$

Decision-Makers Have More Accurate Beliefs: ECB

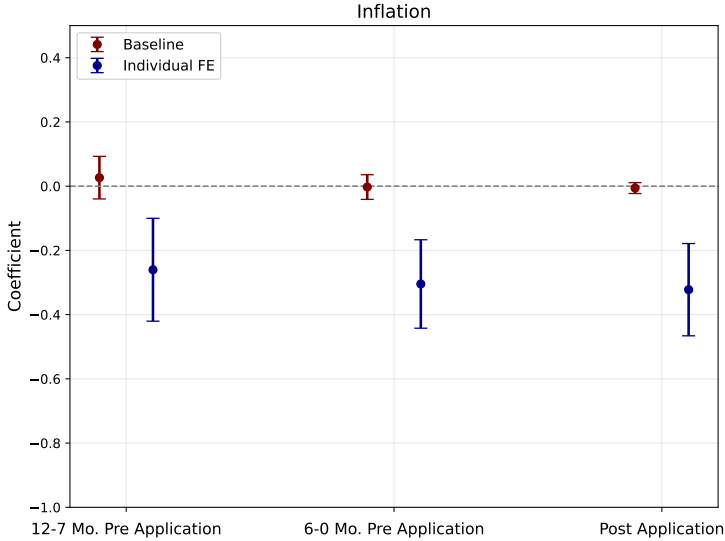


Mortgage rate forecast errors fall by about **20%** pre-application

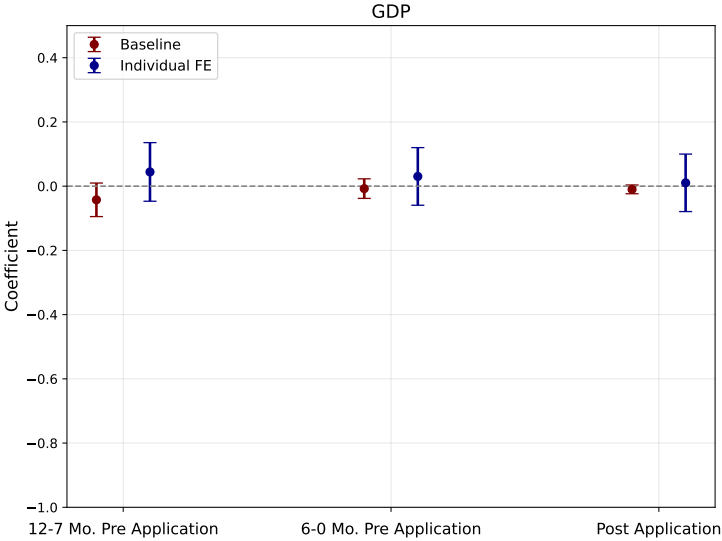
Smaller Differences for Other Variables: Inflation in NY Fed



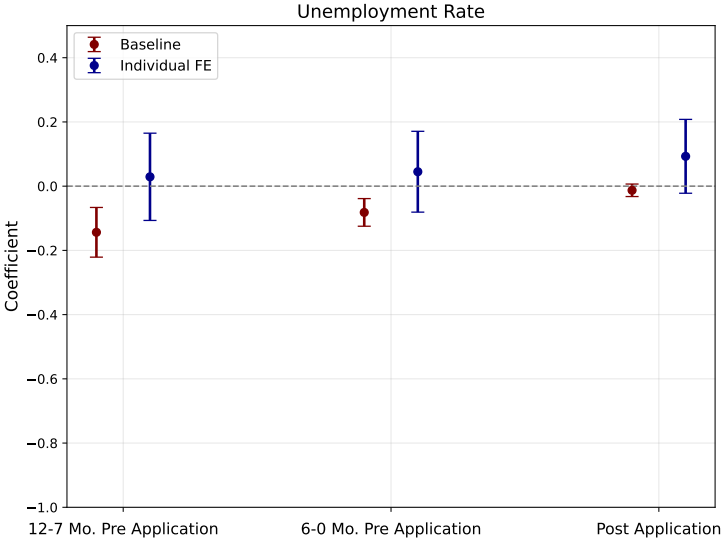
Smaller Differences for Other Variables: Inflation in ECB



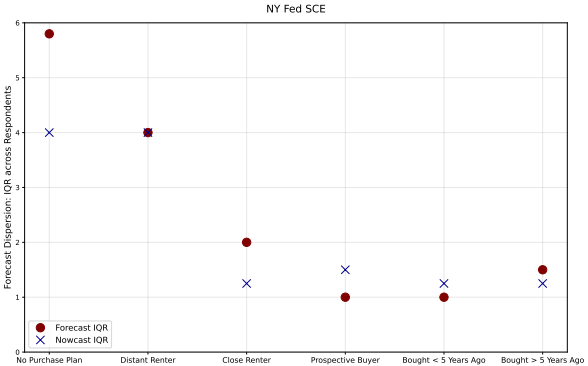
Smaller Differences for Other Variables: GDP in ECB

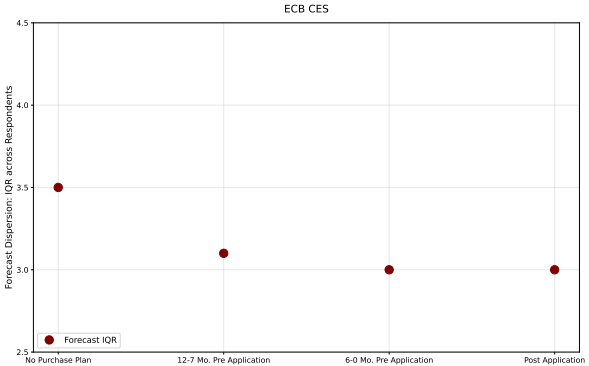


Smaller Differences for Other Variables: UR in ECB



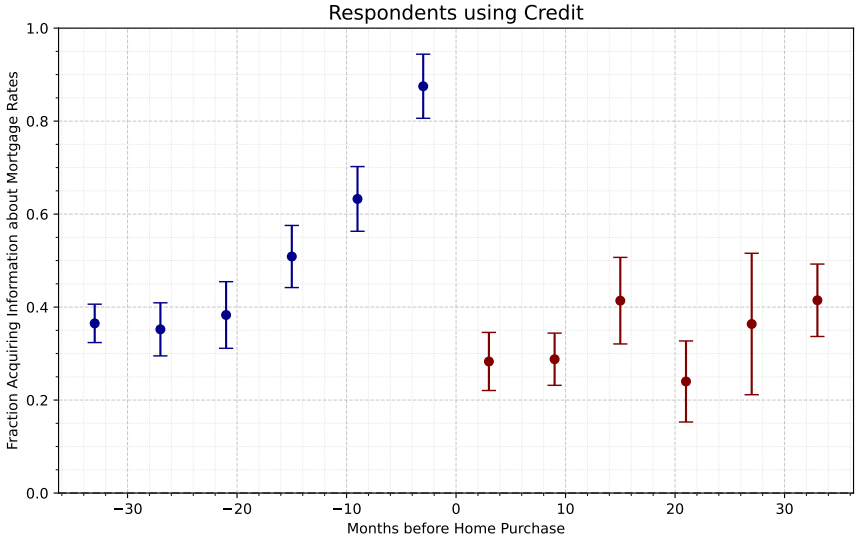
Less Dispersion among DMs' Beliefs: Both Surveys





Outline

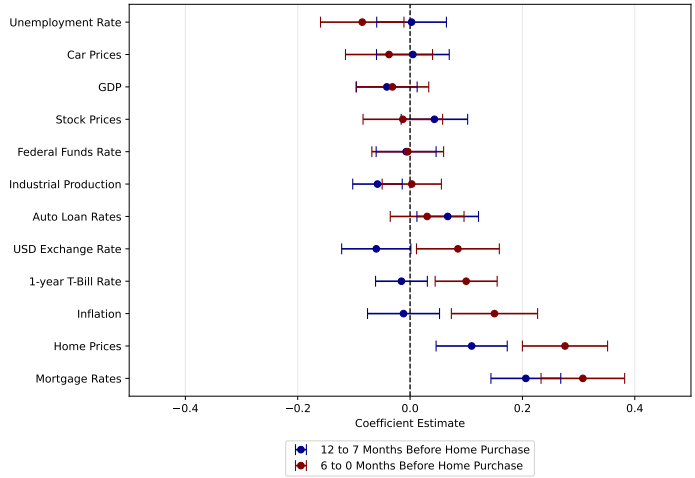
Information Acquisition is Concentrated Pre-Decision



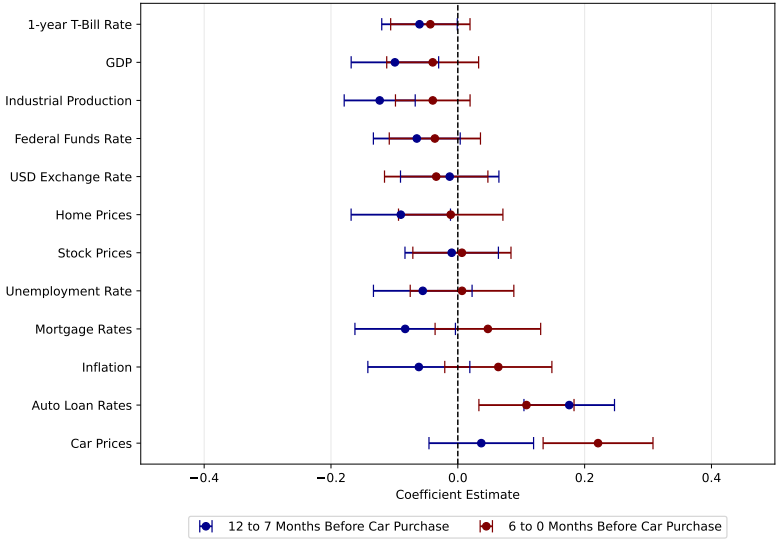
▸ Survey Description

IA is Concentrated on Decision-Relevant Variables

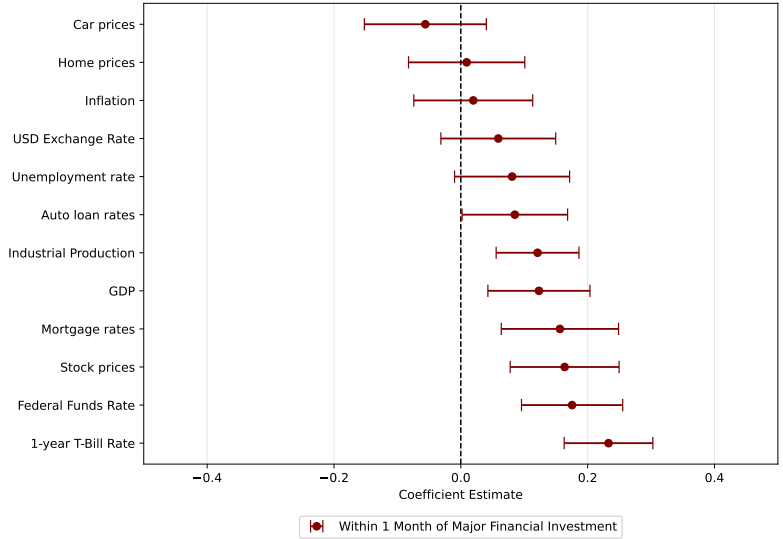
$$\text{Info. Acquisition}_i = \sum_d \beta_d \cdot \mathbf{1}\left(\text{Home Distance}_i = d\right) + \text{Controls}_i + \text{Other Distances}_i + \epsilon_i$$



Patterns in Information Acquisition are Decision-Specific



Patterns in Information Acquisition are Decision-Specific



Additional Results from New Survey

- Information acquisition (IA) is primarily about the current values of variables
- Primary source of information is internet search
- No difference in IA based on mortgage type or refinancing plans
- Positive effect of decision-making due to job relocations on IA
- IA is directly associated with belief accuracy and uncertainty
- Similar improvement in belief accuracy for home purchases to SCE
- Reductions in subjective uncertainty for home purchases

Taking Stock: 5 Facts

1. Households close to **durables** purchases have more **accurate** macro expectations
2. Improvement in expectation accuracy is largest for **interest rates**
3. Decision-makers' beliefs are less **dispersed** and **uncertain**
4. Households concentrate **information acquisition** around durables purchases
5. Households' information acquisition is about **decision-relevant variables**

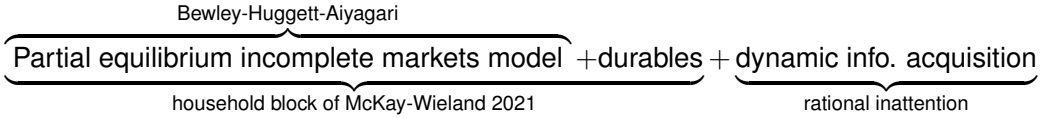
Taking Stock: 5 Facts

1. Households close to **durables** purchases have more **accurate** macro expectations
2. Improvement in expectation accuracy is largest for **interest rates**
3. Decision-makers' beliefs are less **dispersed** and **uncertain**
4. Households concentrate **information acquisition** around durables purchases
5. Households' information acquisition is about **decision-relevant variables**

Next: what are the macroeconomic implications of this **selective inattention**?

Outline

Model Overview



Partial equilibrium incomplete markets model + durables + dynamic info. acquisition

Decision-Making

Given beliefs, HHs choose non-durables $\mathbf{c}$
and durables $\mathbf{d}'$ subject to:

- Income risk + collaterized borrowing
- Stochastic interest rate r
- Depreciation of durables stock
- Durables adjustment costs
- Operating + maintenance costs
- Match-quality shocks (e.g. job change)

Partial equilibrium incomplete markets model + durables + dynamic info. acquisition

Decision-Making

Given beliefs, HHs choose non-durables $\mathbf{c}$
and durables $\mathbf{d}'$ subject to:

- Income risk + collaterized borrowing
- Stochastic interest rate r
- Depreciation of durables stock
- Durables adjustment costs
- Operating + maintenance costs
- Match-quality shocks (e.g. job change)

$$\Downarrow$$

Rich model of how beliefs about $r \longrightarrow \mathbf{c}, \mathbf{d}'$

Partial equilibrium incomplete markets model + durables + dynamic info. acquisition

Decision-Making

Given beliefs, HHs choose non-durables $\mathbf{c}$ and durables $\mathbf{d}'$ subject to:

- Income risk + collaterized borrowing
- Stochastic interest rate r
- Depreciation of durables stock
- Durables adjustment costs
- Operating + maintenance costs
- Match-quality shocks (e.g. job change)

$\Downarrow$

Rich model of how beliefs about $r \longrightarrow \mathbf{c}, \mathbf{d}'$

Information Acquisition

HHs receive signals of endogenous precision about current r = rational inattention

- Cost of signals = $\omega \times$ mutual info.
- Benefit of signals = better choice of $\mathbf{c}, \mathbf{d}'$
- Interest rate is persistent $\Rightarrow$ prior beliefs are state variables

Partial equilibrium incomplete markets model + durables + dynamic info. acquisition

Decision-Making

Given beliefs, HHs choose non-durables $\mathbf{c}$ and durables $\mathbf{d}'$ subject to:

- Income risk + collaterized borrowing
- Stochastic interest rate r
- Depreciation of durables stock
- Durables adjustment costs
- Operating + maintenance costs
- Match-quality shocks (e.g. job change)

$\Downarrow$

Rich model of how beliefs about $r \longrightarrow \mathbf{c}, \mathbf{d}'$

Information Acquisition

HHs receive signals of endogenous precision about current r = rational inattention

- Cost of signals = $\omega \times$ mutual info.
- Benefit of signals = better choice of $\mathbf{c}, \mathbf{d}'$
- Interest rate is persistent $\Rightarrow$ prior beliefs are state variables

$\Downarrow$

Endogenous beliefs about r that come from dynamic information acquisition

Decision-Making Problem, Given Beliefs

- Households do not observe the **current** interest rate, r, but know DGP
- Define households' idiosyncratic information set by $\mathcal{I}$

Decision-Making Problem, Given Beliefs

- Households do not observe the **current** interest rate, r, but know DGP
- Define households' idiosyncratic information set by $\mathcal{I}$
- Given state $\mathbf{x} = (b, d, r, y, \xi, \mathcal{I})$, households solve:

Decision-Making Problem, Given Beliefs

- Households do not observe the **current** interest rate, r, but know DGP
- Define households' idiosyncratic information set by $\mathcal{I}$
- Given state $\mathbf{x} = (b, d, r, y, \xi, \mathcal{I})$, households solve:

$$\mathbf{c}(\mathbf{x}), \mathbf{d}'(\mathbf{x}) = \arg\max_{c, d'} U\Big(c, m(d')\Big) + \beta \cdot \mathbf{E} V\Big(\mathbf{x}' \mid \mathcal{I}\Big)$$

- Households do not observe the **current** interest rate, r, but know DGP
- Define households' idiosyncratic information set by $\mathcal{I}$
- Given state $\mathbf{x} = (b, d, r, y, \xi, \mathcal{I})$, households solve:

$$\mathbf{c}(\mathbf{x}), \mathbf{d}'(\mathbf{x}) = \arg\max_{c,d'} U\Big(c, m(d')\Big) + \beta \cdot \mathbf{E}V\Big(\mathbf{x}' \mid \mathcal{I}\Big)$$

$$c + b' + d' = y + [\exp(r) + \tau_b \mathbf{1}_{b<0}]\, b + (1 - \delta)\, d - A(d, d'),$$

- Households do not observe the **current** interest rate, r, but know DGP
- Define households' idiosyncratic information set by $\mathcal{I}$
- Given state $\mathbf{x} = (b, d, r, y, \xi, \mathcal{I})$, households solve:

$$\mathbf{c}(\mathbf{x}), \mathbf{d}'(\mathbf{x}) = \arg\max_{c,d'} U\Big(c, m(d')\Big) + \beta \cdot \mathbf{E}V\Big(\mathbf{x}' \mid \mathcal{I}\Big)$$

$$c + b' + d' = y + [\exp(r) + \tau_b \mathbf{1}_{b<0}]\, b + (1 - \delta)\, d - A(d, d'), \quad b' \geq -\lambda d'$$

- Households do not observe the **current** interest rate, r, but know DGP
- Define households' idiosyncratic information set by $\mathcal{I}$
- Given state $\mathbf{x} = (b, d, r, y, \xi, \mathcal{I})$, households solve:

$$\mathbf{c}(\mathbf{x}), \mathbf{d}'(\mathbf{x}) = \arg\max_{c,d'} U\Big(c, m(d')\Big) + \beta \cdot \mathbf{E}V\Big(\mathbf{x}' \mid \mathcal{I}\Big)$$

$$c + b' + d' = y + [\exp(r) + \tau_b \mathbf{1}_{b<0}]\, b + (1-\delta)\, d - \textbf{A(d, d')}, \quad b' \geq -\lambda d'$$

$$\textbf{A(d, d')} = \begin{cases} \underbrace{\nu \cdot d}_{\text{op. costs}} & \text{if } d' = \underbrace{(1-\delta)d}_{\text{depreciation}} + \underbrace{\delta \cdot \chi \cdot d}_{\text{maint. costs}} \\ \underbrace{\nu \cdot d}_{\text{op. costs}} + \underbrace{f \cdot (1-\delta)d}_{\text{fixed adj. cost}} & \text{else} \end{cases}$$

- Households do not observe the **current** interest rate, r, but know DGP
- Define households' idiosyncratic information set by $\mathcal{I}$
- Given state $\mathbf{x} = (b, d, r, y, \xi, \mathcal{I})$, households solve:

$$\mathbf{c}(\mathbf{x}), \mathbf{d}'(\mathbf{x}) = \arg\max_{c,d'} U\Big(c, \mathbf{m}(d')\Big) + \beta \cdot \mathbf{E}\, V\Big(\mathbf{x}' \mid \mathcal{I}\Big)$$

$$c + b' + d' = y + [\exp(r) + \tau_b \mathbf{1}_{b<0}]\, b + (1-\delta)\, d - A(d, d'), \quad b' \geq -\lambda d'$$

$$\mathbf{m}(d') = d' \times \max\Big\{\xi, \mathbf{1}_{d' \neq (1-\delta+\delta\cdot\chi)d}\Big\}, \quad \xi \sim \text{Bern}(\bar{\xi}) = \text{match-quality shock}$$

$\xi = 0 \Rightarrow$ have to adjust for **exogenous** reasons (e.g. job relocation)

- Households do not observe the **current** interest rate, r, but know DGP
- Define households' idiosyncratic information set by $\mathcal{I}$
- Given state $\mathbf{x} = (b, d, r, y, \xi, \mathcal{I})$, households solve:

$$\mathbf{c}(\mathbf{x}), \mathbf{d}'(\mathbf{x}) = \arg\max_{c,d'} U\Big(c, m(d')\Big) + \beta \cdot \mathbf{E}V\Big(\mathbf{x}' \mid \mathcal{I}\Big)$$

$$c + b' + d' = y + [\exp(r) + \tau_b \mathbf{1}_{b<0}]\, b + (1 - \delta)\, d - A(d, d'), \quad b' \geq -\lambda d'$$

- $\log y$ follows AR1 $+$ observed by households
- r follows an AR1 that households correctly perceive

Information Acquisition Problem to Determine Beliefs

- Simplifying assumption: HHs can only acquire **Gaussian** signals about **current** r
  - $\Rightarrow$ Prior beliefs in each period can be summarized by: $r \sim N(\mu, \Sigma)$

Information Acquisition Problem to Determine Beliefs

- Simplifying assumption: HHs can only acquire **Gaussian** signals about **current** r
- Households choose signal variance Σ_e, anticipating choices of $\mathbf{c}$ and $\mathbf{d}'$:

$$V(\mathbf{x}) = \max_{\Sigma_e} \mathbf{E}\Big[U(\mathbf{c}, m(\mathbf{d}')) + \beta V\left(\mathbf{x}'\right) \mid \mathbf{x}\Big]$$

Information Acquisition Problem to Determine Beliefs

- Simplifying assumption: HHs can only acquire **Gaussian** signals about **current** r
- Households choose signal variance Σ_e, anticipating choices of $\mathbf{c}$ and $\mathbf{d}'$:

$$V(\mathbf{x}) = \max_{\Sigma_e} \mathbf{E}\Big[U(\mathbf{c}, m(\mathbf{d}')) + \beta V\left(\mathbf{x}'\right) \mid \mathbf{x}\Big] + \omega \cdot \underbrace{\log\left(1 - G\right)}_{\text{mutual info.}}$$

$$G = \frac{\Sigma}{\Sigma + \Sigma_e}$$

$$\widehat{\mathbf{E}}(r) = (1 - G)\mu + G\left(r + e\right), \quad e \sim N(0, \Sigma_e)$$

Information Acquisition Problem to Determine Beliefs

- Simplifying assumption: HHs can only acquire **Gaussian** signals about **current** r
- Households choose signal variance Σ_e, anticipating choices of $\mathbf{c}$ and $\mathbf{d}'$:

$$V(\mathbf{x}) = \max_{\Sigma_e} \mathbf{E}\Big[U(\mathbf{c}, m(\mathbf{d}')) + \beta V\left(\mathbf{x}'\right) \mid \mathbf{x}\Big] + \omega \cdot \underbrace{\log\left(1 - G\right)}_{\text{mutual info.}}$$

$$G = \frac{\Sigma}{\Sigma + \Sigma_e}$$

$$\widehat{\mathbf{E}}(r) = (1 - G)\mu + G\left(r + e\right), \quad e \sim N(0, \Sigma_e)$$

$$\mu' = (1 - \rho)\bar{r} + \rho\widehat{\mathbf{E}}(r), \quad \Sigma' = \rho^2\Sigma(1 - G) + \sigma^2$$

- Simplifying assumption: HHs can only acquire **Gaussian** signals about **current** r
- Households choose signal variance Σ_e, anticipating choices of $\mathbf{c}$ and $\mathbf{d}'$:

$$V(\mathbf{x}) = \max_{\Sigma_e} \mathbf{E}\Big[U(\mathbf{c}, m(\mathbf{d}')) + \beta V\left(\mathbf{x}'\right) \mid \mathbf{x}\Big] + \omega \cdot \underbrace{\log\left(1 - G\right)}_{\text{mutual info.}}$$

$$G = \frac{\Sigma}{\Sigma + \Sigma_e}$$

$$\widehat{\mathbf{E}}(r) = (1 - G)\mu + G\left(r + e\right), \quad e \sim N(0, \Sigma_e)$$

$$\mu' = (1 - \rho)\bar{r} + \rho\widehat{\mathbf{E}}(r), \quad \Sigma' = \rho^2\Sigma(1 - G) + \sigma^2$$

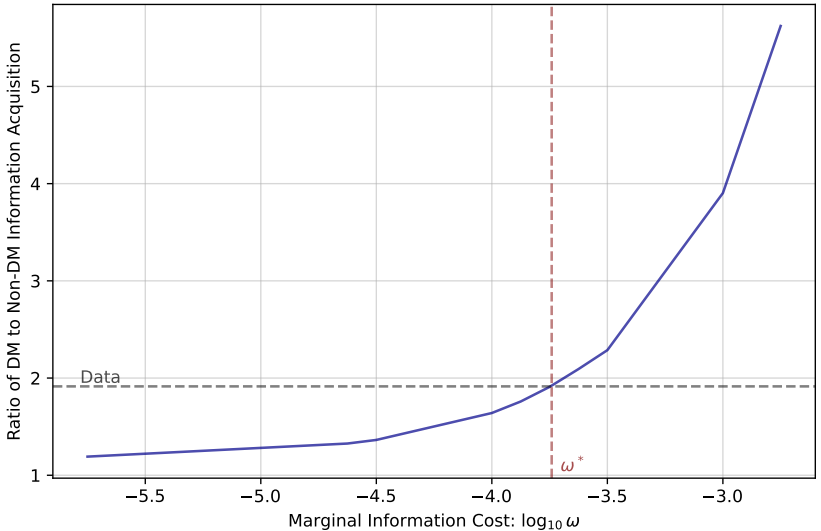
- $\mathbf{c}, \mathbf{d}'$ maximize objective with **belief errors**
  - Lower $\Sigma_e \Rightarrow \widehat{\mathbf{E}}(r) \longrightarrow r \Rightarrow$ **errors** $\longrightarrow 0 \Rightarrow$ smaller utility loss from $\mathbf{c}, \mathbf{d}'$

Calibrated Parameters

Parameter	Description	Value	Source
Internally-Calibrated			
β	Discount factor	0.9829	Asset-to-GDP ratio
ψ	Non-durables exponent	0.627	Durable-to-nondurable consumption ratio
f	Fixed cost	0.11	Adjustment probability
$1-\overline{\xi}$	Match-quality shock probability	0.034	Share of adjustments from MQ shocks
ω	Marginal information cost	$10^{-3.741}$	Concentration in information acquisition
Externally-Calibrated			
γ	RRA (and inverse EIS)	2	.
ε	Durables elasticity of substitution	0.5	McKay and Wieland (2021)
$1-\lambda$	Required downpayment	0.2	McKay and Wieland (2021)
δ	Depreciation rate	0.017	McKay and Wieland (2021)
χ	Maintenance share	0.35	McKay and Wieland (2021)
ν	Operating cost	0.012	McKay and Wieland (2021)
ρ_y	Income persistence	0.977	Flodén and Lindé (2001)
σ_ϵ	Income shock std. dev.	0.058	Flodén and Lindé (2001)
$\overline{r}$	Real rate mean	0.0143	10-Year Treasury Rate: 1961-2024
ρ	Real rate persistence	0.979	10-Year Treasury Rate: 1961-2024
σ	Real rate shock std. dev.	0.0014	10-Year Treasury Rate: 1961-2024
τ_b	Borrowing spread	0.4156%	30-Year Fixed Mortgage Rate: 1971-2024

▸ Welfare Loss

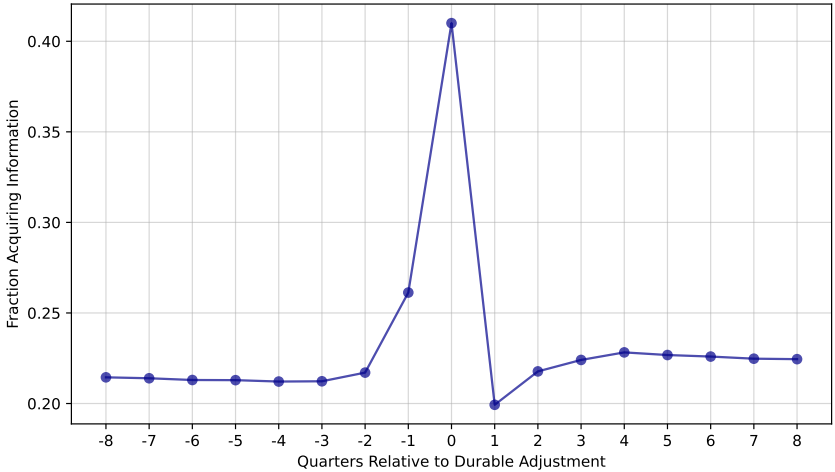
Effect of Information Cost on Information Acquisition



▸ Summary Stats ▸ Durables Adjustment Hazard

Selective Inattention at the Micro-Level

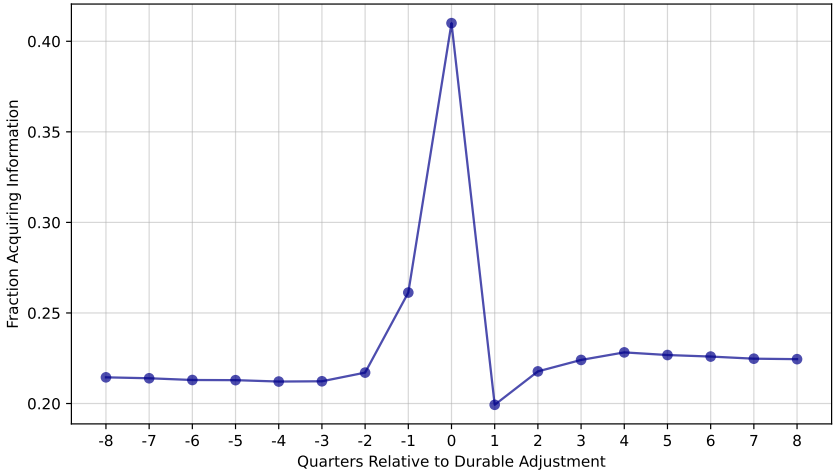
Extensive Margin of Info. Acquisition in Event-Time



Households acquire information in **all** periods...

▸ Durables Share ▸ Information Acquisition sS ▸ Nowcasts

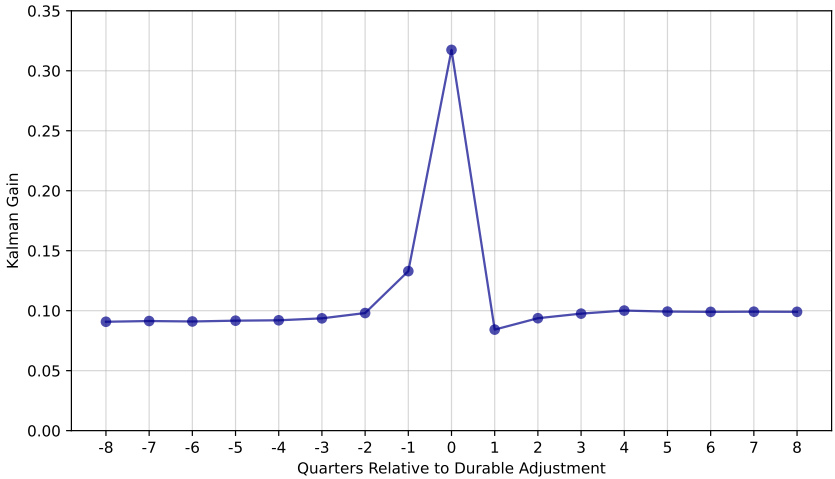
Extensive Margin of Info. Acquisition in Event-Time



... but this information acquisition is **concentrated** around durables adjustments

▸ Durables Share ▸ Information Acquisition sS ▸ Nowcasts

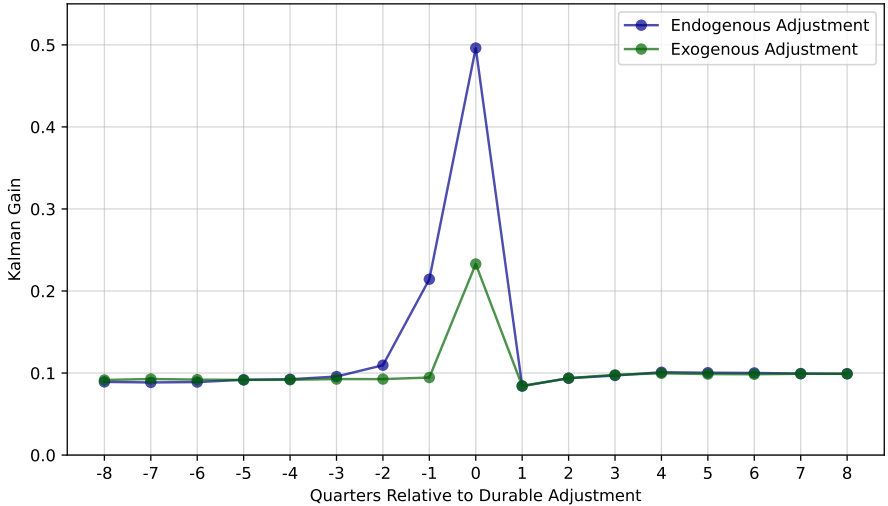
Intensive Margin of Info. Acquisition in Event-Time



Increase in information acquisition is even larger on **intensive** margin

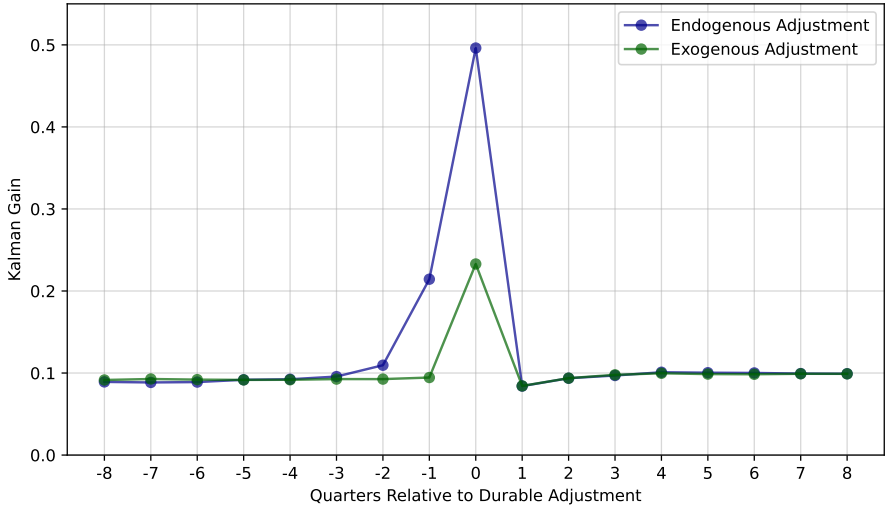
▸ Durables Share ▸ Information Acquisition sS ▸ Nowcasts

Endogenous Adjustments ⇒ Info. Acquisition Pre-Choice



Information acquisition increases in anticipation of **state-dependent** adjustments...

Endogenous Adjustments ⇒ Info. Acquisition Pre-Choice



... but is concentrated around the choice for **time-dependent** adjustments Afrouzi et al. 24

Implications for Aggregate Beliefs

- Direct evidence of information-rigidity = CG (2015) regression

$$\underbrace{r_{t+3} - \overline{F}_t r_{t+3}}_{\text{forecast error}} = \alpha + \beta_{CG} \underbrace{\left(\overline{F}_t r_{t+3} - \overline{F}_{t-1} r_{t+3}\right)}_{\text{forecast revision}} + \epsilon_t$$

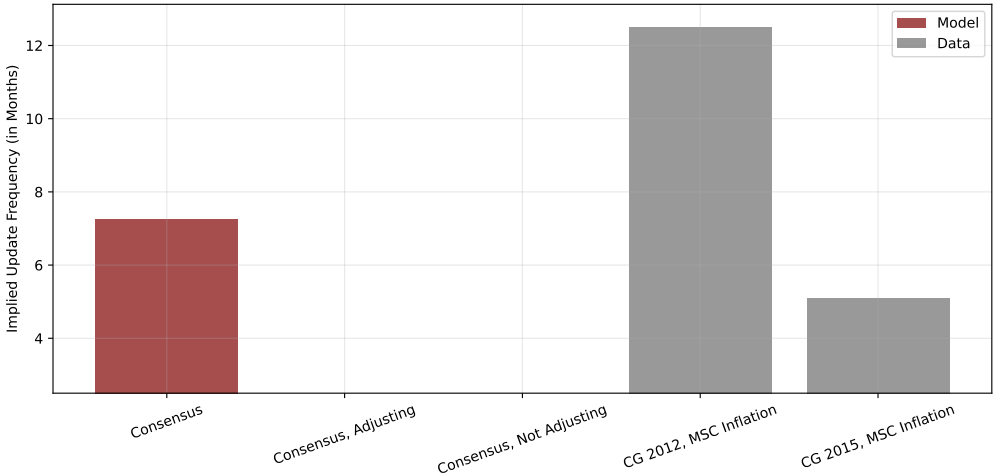
- Common finding: $\beta_{CG} > 0 \Rightarrow$ aggregate expectations are **sluggish**
- In a sticky-information model (constant probability of updating expectations),

$$\text{Implied Update Frequency} = 3\,(1 + \beta_{CG}) \text{ Months}$$

$\Rightarrow$ Common target for calibrating sticky information models (e.g. McKay-Wieland 2021)

Aggregate Beliefs are Sluggish, Like in the Data...

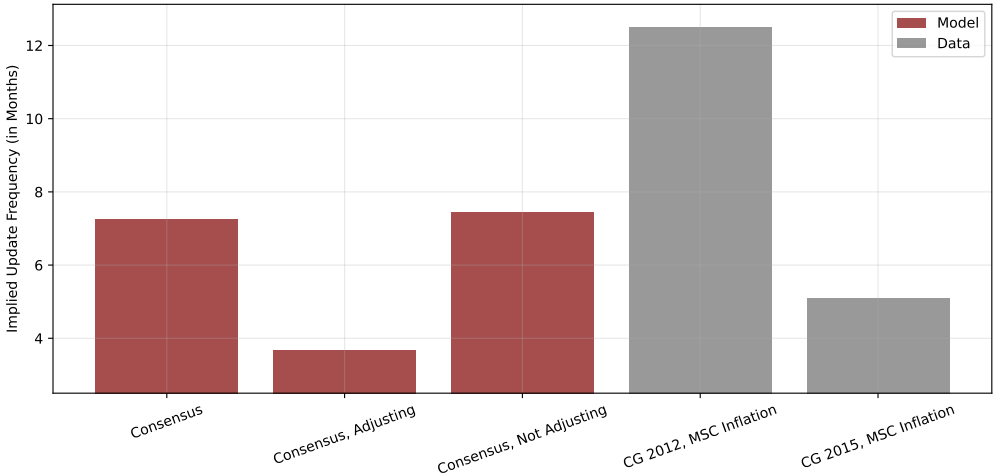
Implied Update Frequency $= 3\,(1 + \beta_{CG})$ Months



▸ Welfare Loss

... But This Masks Substantial Selection into Attention!

Implied Update Frequency $= 3\,(1 + \beta_{CG})$ Months

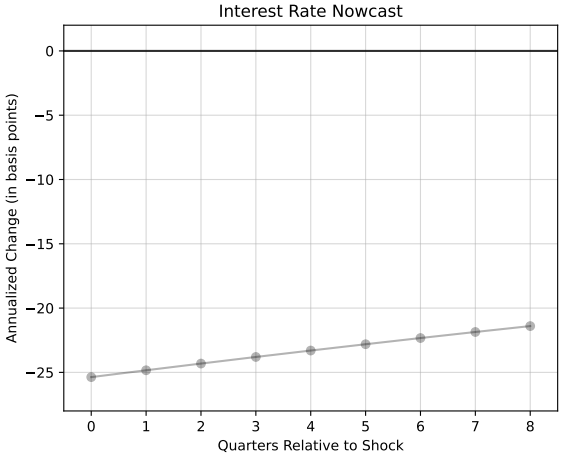


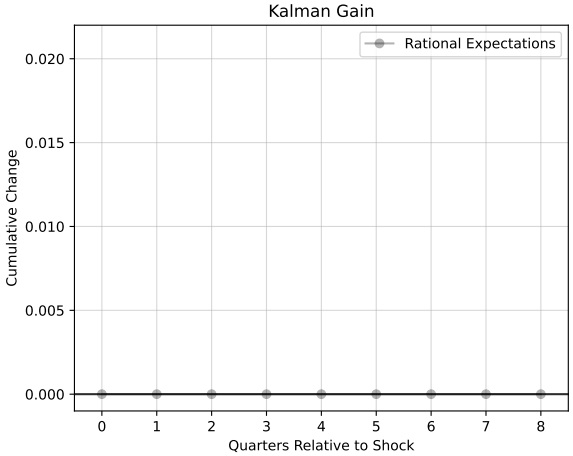
▸ Welfare Loss

Outline

Responses to Interest Rate Cuts

Impulse Response of Beliefs to Rate Cut

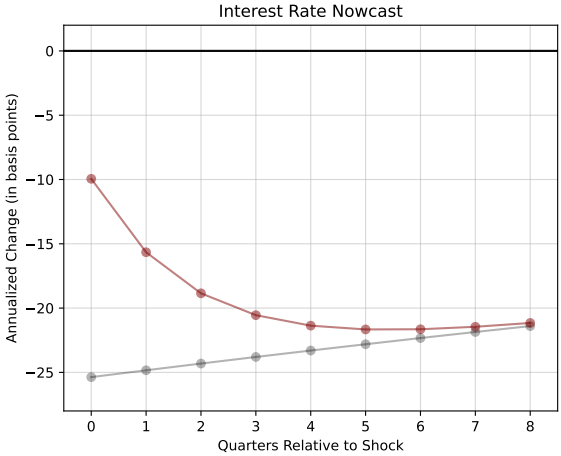


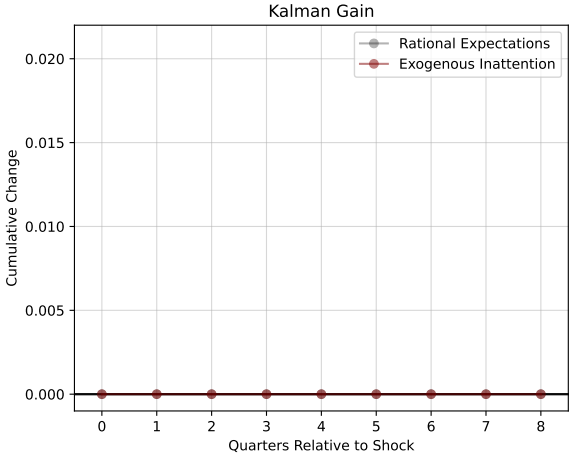


Rational expectations: households observe current interest rate

▸ Decomposition

Impulse Response of Beliefs to Rate Cut

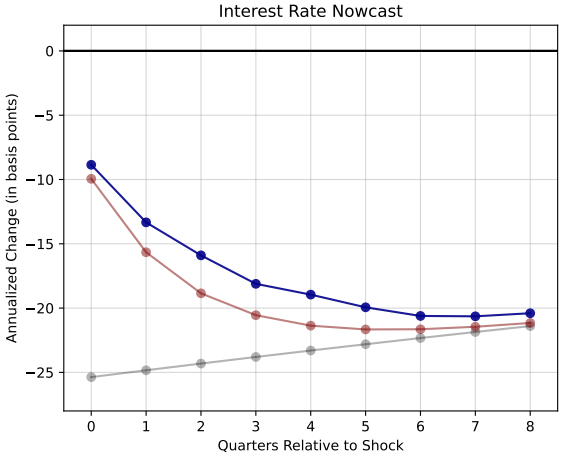


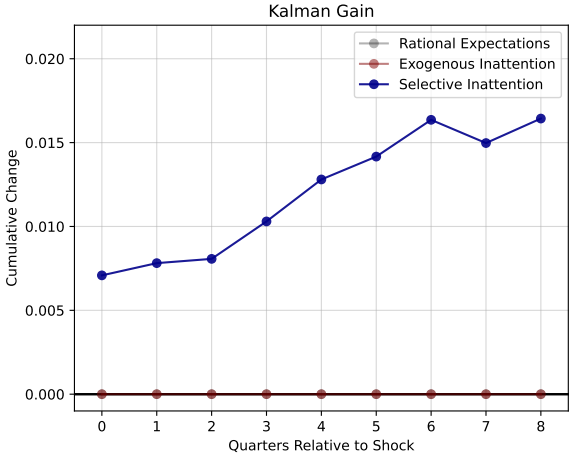


Exogenous inattention: constant G set to match CG 15 coefficient in baseline model

▸ Decomposition

Impulse Response of Beliefs to Rate Cut

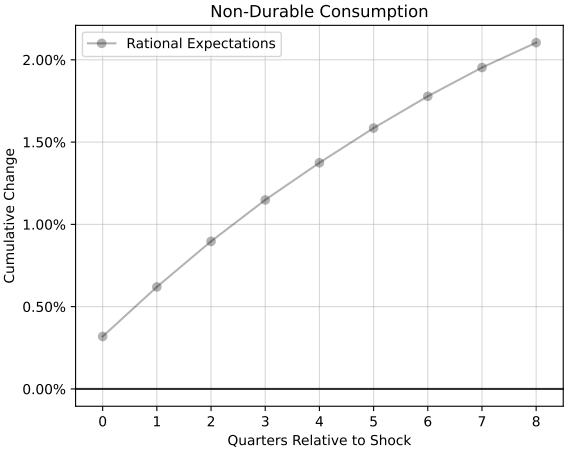


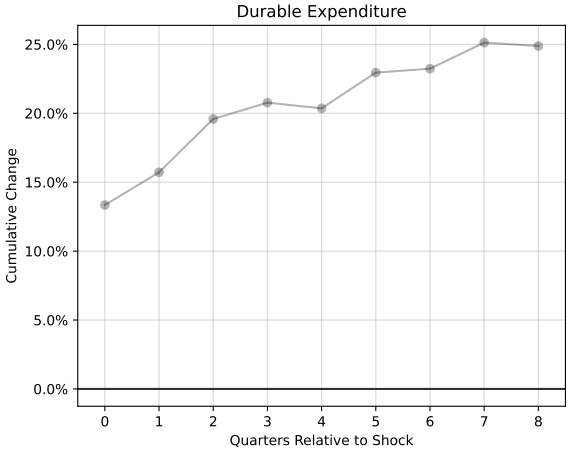


Selective inattention: baseline model with endogenous information acquisition

▸ Decomposition

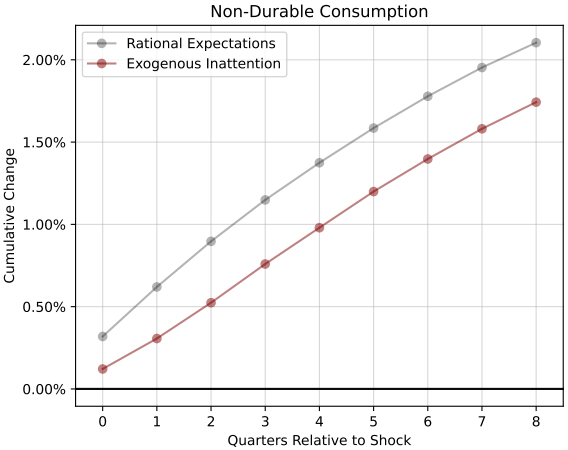
Impulse Response of Spending to Rate Cut

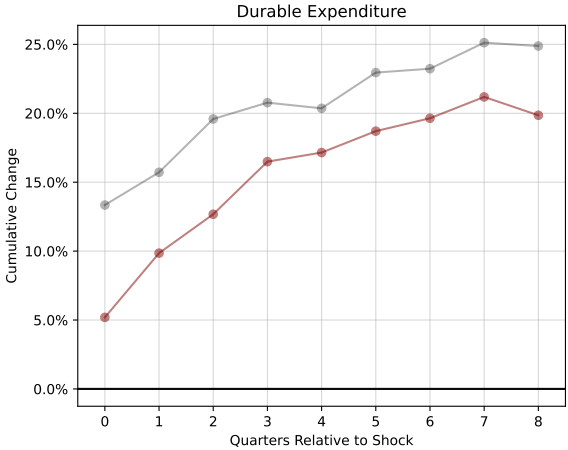




▸ Incorporating GE Effects ▸ Non-Linearity

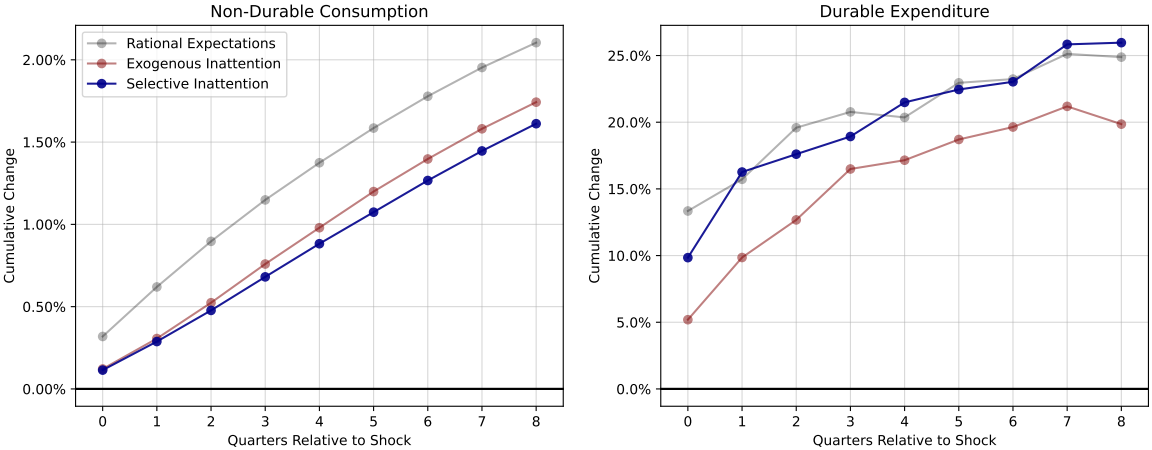
Impulse Response of Spending to Rate Cut





▸ Incorporating GE Effects ▸ Non-Linearity

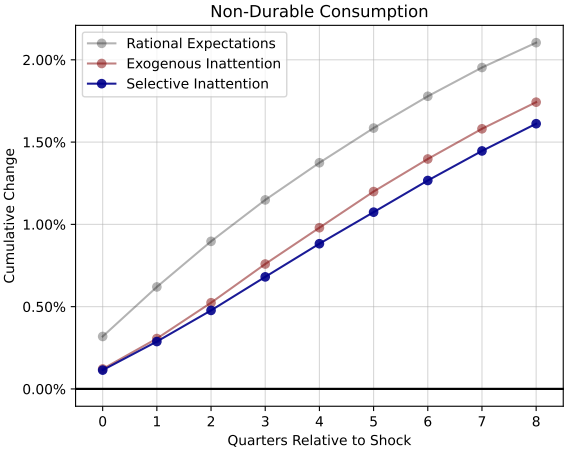
Impulse Response of Spending to Rate Cut

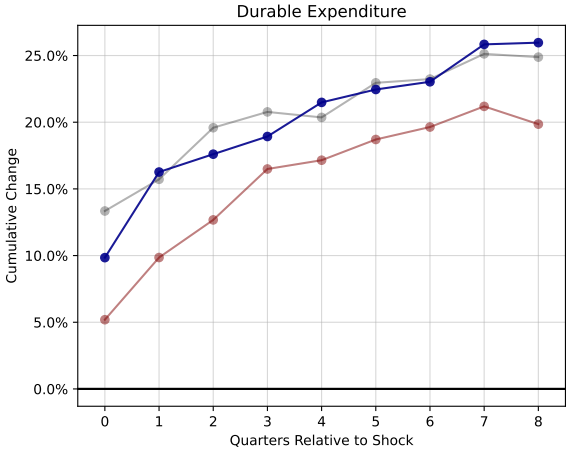


Non-durable response is dampened like with **exogenous inattention**...

▸ Incorporating GE Effects ▸ Non-Linearity

Impulse Response of Spending to Rate Cut

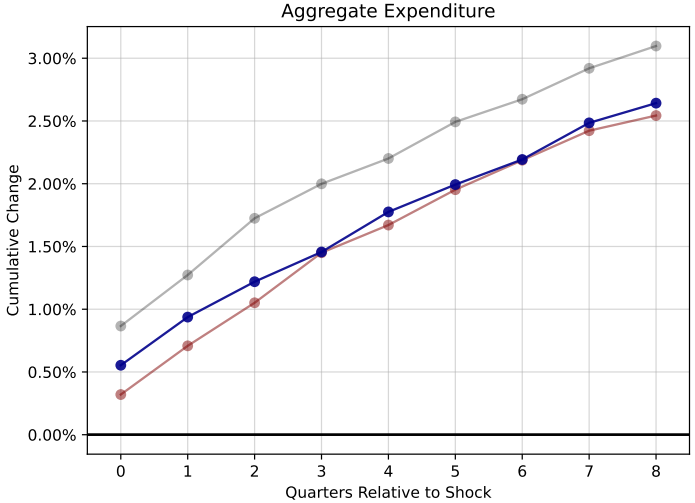




... but **durable** response is larger, closer to **rational expectations**!

▸ Incorporating GE Effects ▸ Non-Linearity

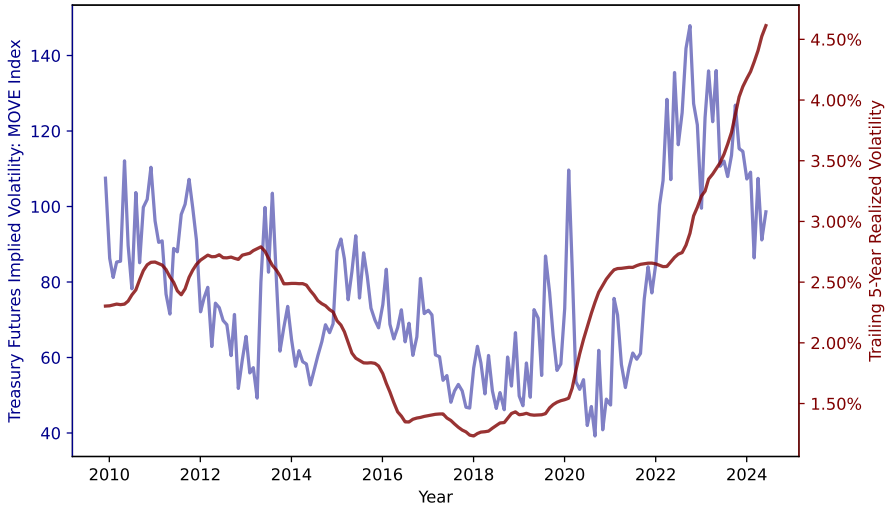
Small Difference in Aggregate Spending Response to Rate Cut



Shift in **composition** of spending to durables $\Rightarrow$ GE effects through $\frac{p_d}{p_c}$ Barsky et al. 07

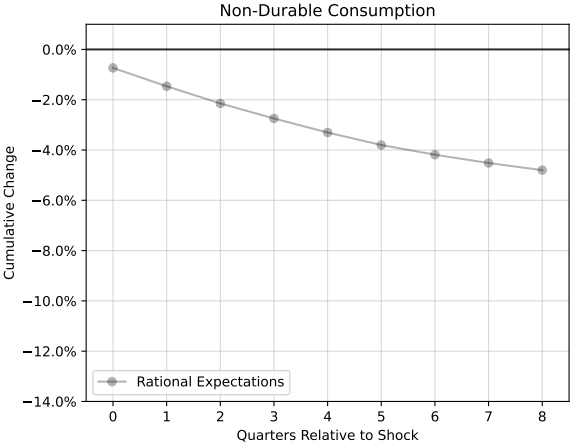
Effects of Changes in Interest Rate Volatility

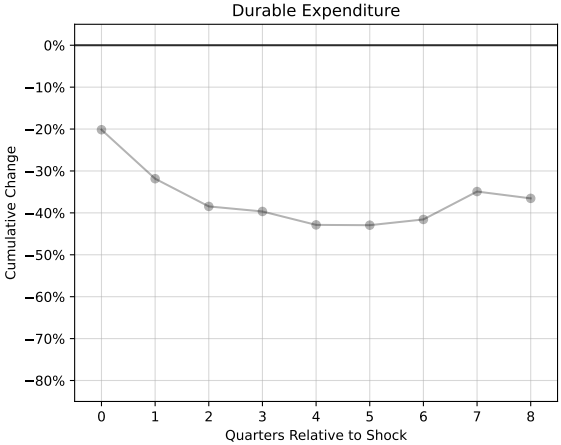
Motivation: Recent Rise in Rate Volatility



▸ Beliefs

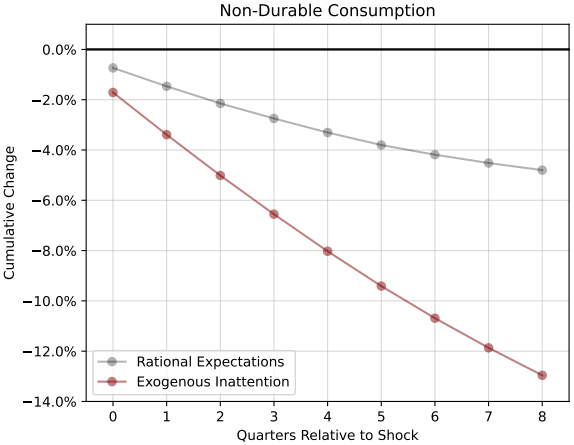
Impulse Response of Spending to Increase in Volatility

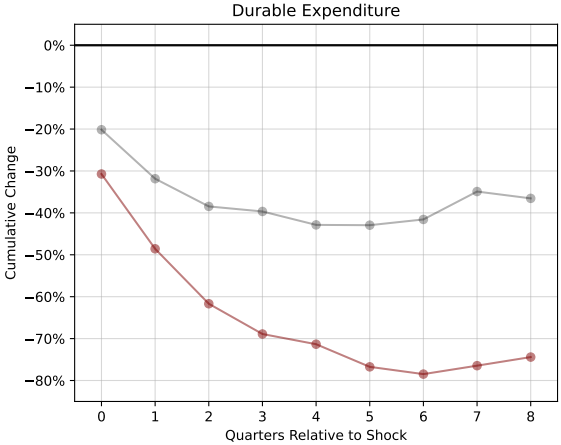




Increase in volatility $\Rightarrow$ spending falls due to precautionary motives...

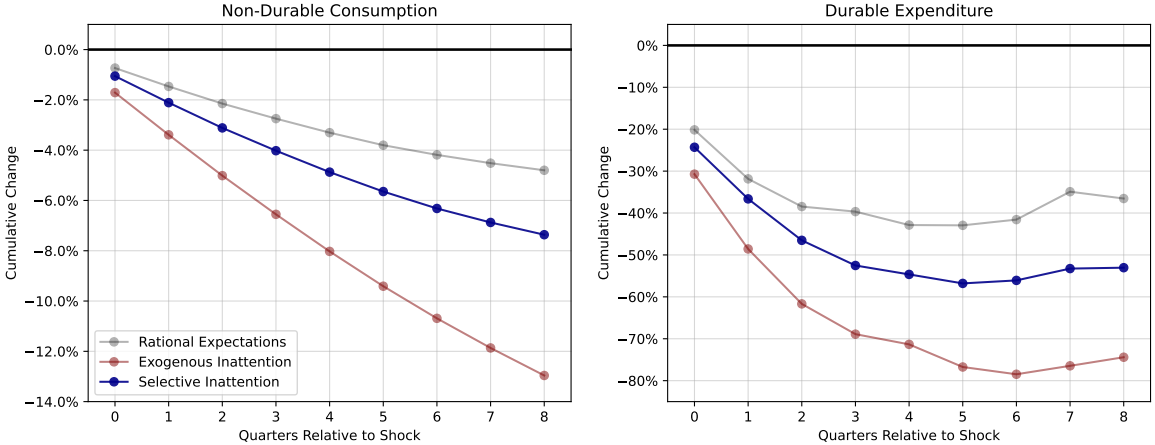
Impulse Response of Spending to Increase in Volatility





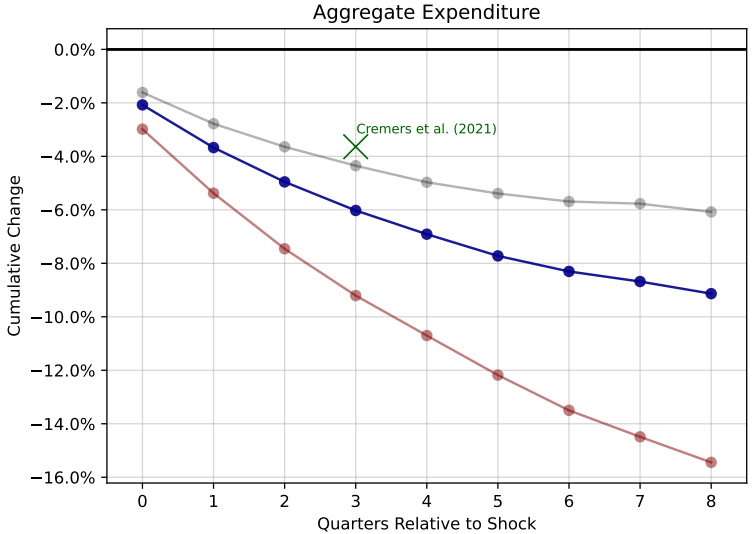
... which is stronger with **exogenous inattention** because of additional uncertainty

Impulse Response of Spending to Increase in Volatility



Selective inattention undoes over 50% of this fall due to ↑ info. acquisition!

Response of Aggregate Spending is Closer to the Data



▸ State-Dependence of Rate Cuts

Outline

Conclusion

- Households are selectively inattentive to interest rates
  - IA is concentrated around durables purchases, where beliefs are more accurate
- **Like** exogenous inattention, selective inattention generates:
  1. Slow-moving aggregate beliefs
  2. Dampened responses of non-durable consumption to interest rates

Conclusion

- Households are selectively inattentive to interest rates
  - IA is concentrated around durables purchases, where beliefs are more accurate
- **Like** exogenous inattention, selective inattention generates:
  1. Slow-moving aggregate beliefs
  2. Dampened responses of non-durable consumption to interest rates
- **Unlike** exogenous inattention, selective inattention:
  1. Shifts the **composition** of spending responses to rate cuts towards durables
  2. **Accelerates** the impact of larger rate cuts
  3. **Dampens** responses to changes in volatility closer to the data

Conclusion

- Households are selectively inattentive to interest rates
  - IA is concentrated around durables purchases, where beliefs are more accurate
- **Like** exogenous inattention, selective inattention generates:
  1. Slow-moving aggregate beliefs
  2. Dampened responses of non-durable consumption to interest rates
- **Unlike** exogenous inattention, selective inattention:
  1. Shifts the **composition** of spending responses to rate cuts towards durables
  2. **Accelerates** the impact of larger rate cuts
  3. **Dampens** responses to changes in volatility closer to the data

Takeaway: Aggregate inattention hides substantial selection into attention that can be measured, modeled, and has different implications!

THANK YOU!

tdesilva@stanford.edu

www.timdesilva.me

Related Literature and Contribution

- Household expectation formation $\rightarrow$ *aggregate inattention masks* ***selection***

  Coibion & Gorodnichenko (2012, 2015), Bordalo et al. (2020), D'Acunto et al. (2023), ...

Related Literature and Contribution

- Household expectation formation $\rightarrow$ *aggregate inattention masks* ***selection***
- Models of durable adjustments $\rightarrow$ ***endogenize*** *info. acquisition* $+$ *inattention*

  Caballero (1990), Barsky et al. (2007), Berger & Vavra (2015), McKay and Wieland (2021), Gavazza & Lanteri (2021), Beraja & Wolf (2022), Beraja & Zorzi (2024)

Related Literature and Contribution

- Household expectation formation $\rightarrow$ *aggregate inattention masks* ***selection***
- Models of durable adjustments $\rightarrow$ ***endogenize*** *info. acquisition + inattention*
- Rational inattention $\rightarrow$ *add to a* ***non-quadratic*** *decision problem with 2 actions*

  Sims (2003), Mackowiak & Wiederholt (2009, 2015), Zhong (2022), Hebert & Woodford (2023), Mackowiak et al. (2023), Afrouzi et al. (2024)

Related Literature and Contribution

- Household expectation formation $\rightarrow$ *aggregate inattention masks* ***selection***
- Models of durable adjustments $\rightarrow$ ***endogenize*** *info. acquisition + inattention*
- Rational inattention $\rightarrow$ *add to a* ***non-quadratic*** *decision problem with 2 actions*
- Exogenous inattention as a source of macro sluggishness $\rightarrow$ *selective inattention generates* ***decision-specific*** *dampening* generates

  Lucas (1972), Gabaix & Laibson (2001), Mankiw & Reis (2002), Angeletos & Lian (2016), Carroll et al. (2020), Auclert et al. (2020), McKay & Wieland (2021), Beraja & Wolf (2022), Cochrane (2025), ...

Related Literature and Contribution

- Household expectation formation $\rightarrow$ *aggregate inattention masks* ***selection***
- Models of durable adjustments $\rightarrow$ ***endogenize*** *info. acquisition + inattention*
- Rational inattention $\rightarrow$ *add to a* ***non-quadratic*** *decision problem with 2 actions*
- Exogenous inattention as a source of macro sluggishness $\rightarrow$ *selective inattention generates* ***decision-specific*** *dampening*
- Macro models with endogenous household inattention $\rightarrow$ *inattention determined by* ***type of decision*** *that households make*

  Alvarez et al. (2011, 2013), Broer et al. (2022), Guerreiro (2023), Ahn et al. (2024)

Related Literature and Contribution

- Household expectation formation $\rightarrow$ *aggregate inattention masks* ***selection***
- Models of durable adjustments $\rightarrow$ ***endogenize*** *info. acquisition + inattention*
- Rational inattention $\rightarrow$ *add to a* ***non-quadratic*** *decision problem with 2 actions*
- Exogenous inattention as a source of macro sluggishness $\rightarrow$ *selective inattention generates* ***decision-specific*** *dampening*
- Macro models with endogenous household inattention $\rightarrow$ *inattention determined by* ***type of decision*** *that households make*
- Effects of (interest rate) uncertainty $\rightarrow$ *depends on* ***endogeneity of inattention***

Sandmo (1970), Bloom (2014), Bloom et al. (2020), Cremers et al. (2021), Ilut et al. (2024)

Back

Survey Description

We design and conduct a cross-sectional survey of U.S. households via Prolific

Survey Description

We design and conduct a cross-sectional survey of U.S. households via Prolific

Survey Innovations

- Direct measure of distance from durable adjustments
  - Primary home purchase
  - Car purchases
- Measures of information acquisition other than forecasting performance
  - Last active search for information about key variables

We design and conduct a cross-sectional survey of U.S. households via Prolific

Survey Innovations

- Direct measure of distance from durable adjustments
  - Primary home purchase
  - Car purchases
- Measures of information acquisition other than forecasting performance
  - Last active search for information about key variables

Main Blocks

1. Home decision-making: distance from primary home purchase

Survey Description

We design and conduct a cross-sectional survey of U.S. households via Prolific

Survey Innovations

- Direct measure of distance from durable adjustments
  - Primary home purchase
  - Car purchases
- Measures of information acquisition other than forecasting performance
  - Last active search for information about key variables

Main Blocks

1. Home decision-making
2. Other decisions: distance from car purchase + other major financial decisions

Survey Description

We design and conduct a cross-sectional survey of U.S. households via Prolific

Survey Innovations

- Direct measure of distance from durable adjustments
  - Primary home purchase
  - Car purchases
- Measures of information acquisition other than forecasting performance
  - Last active search for information about key variables

Main Blocks

1. Home decision-making
2. Other decisions
3. Information acquisition: time since last search + type/source of info searched

Survey Description

We design and conduct a cross-sectional survey of U.S. households via Prolific

Survey Innovations

- Direct measure of distance from durable adjustments
  - Primary home purchase
  - Car purchases
- Measures of information acquisition other than forecasting performance
  - Last active search for information about key variables

Main Blocks

1. Home decision-making
2. Other decisions
3. Information acquisition
4. Macro expectations: beliefs about mortgage rates, T-Bill rates, and inflation

Survey Description

We design and conduct a cross-sectional survey of U.S. households via Prolific

Survey Innovations

- Direct measure of distance from durable adjustments
  - Primary home purchase
  - Car purchases
- Measures of information acquisition other than forecasting performance
  - Last active search for information about key variables

Main Blocks

1. Home decision-making
2. Other decisions
3. Information acquisition
4. Macro expectations
5. Background & financial situation: info on household's balance-sheet using SCF format, demographics, job relocations

Questions Back

Main Survey Questions

- Eliciting our main measure of information acquisition

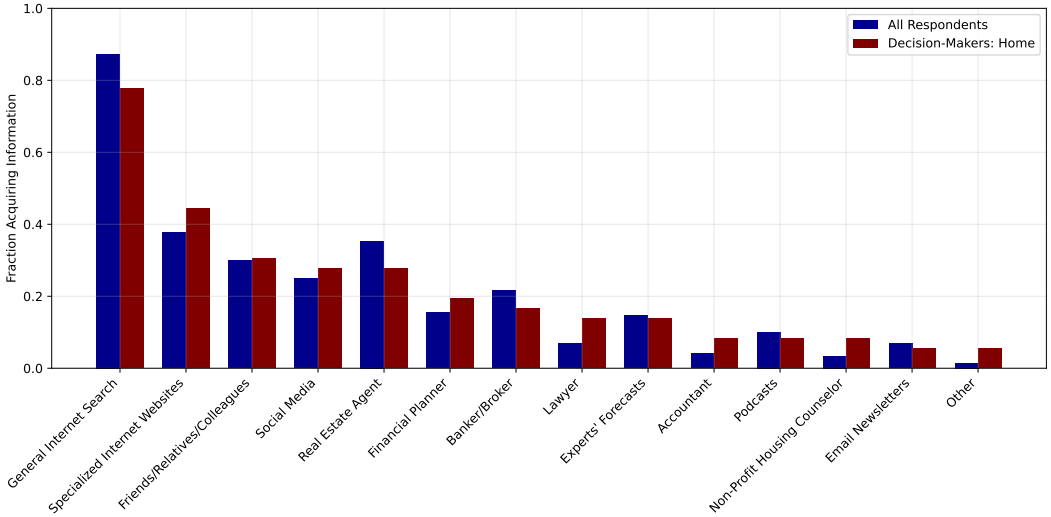
  Step 1: *In the last 3 years, did you actively search for information about any of the following economic variables in the U.S.?*
  By "active search" we mean a deliberate effort to find information which could include searching online, reading news articles or reports, talking to a financial advisor or broker, or any other intentional effort to gather information.
  Step 2: *How many months ago did you last actively search for information about mortgage rates?*

- Eliciting households' distance from the primary home purchase

  Owners: *How many months ago did you finalize the purchase of your current primary residence?*
  Renters: *How many months from now do you expect the closing on your primary residence purchase?*
  By "closing", we mean signing the final documents to officialize the purchase.

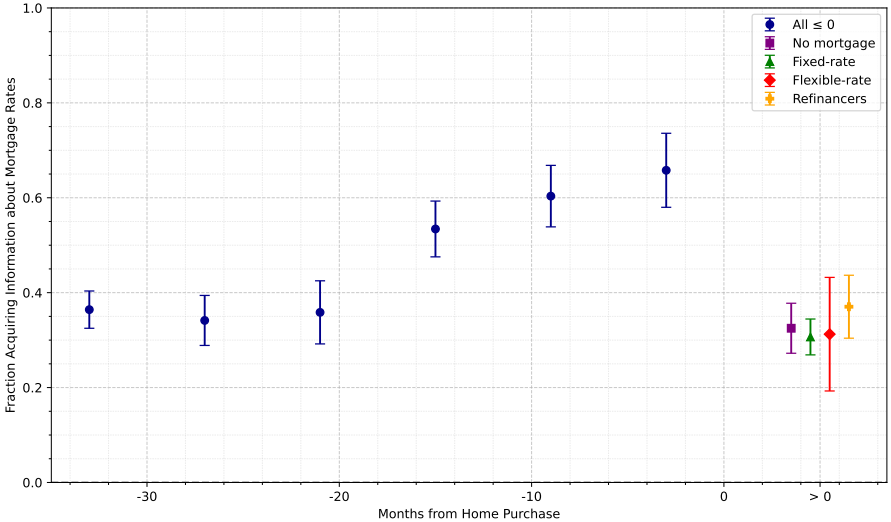
Back

Sources of Information Acquisition



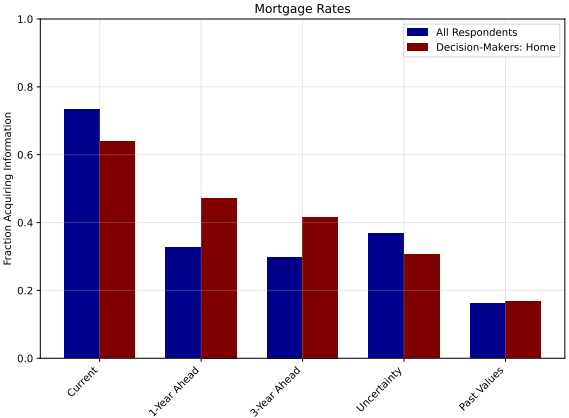
Back: IA Back: Additional Results

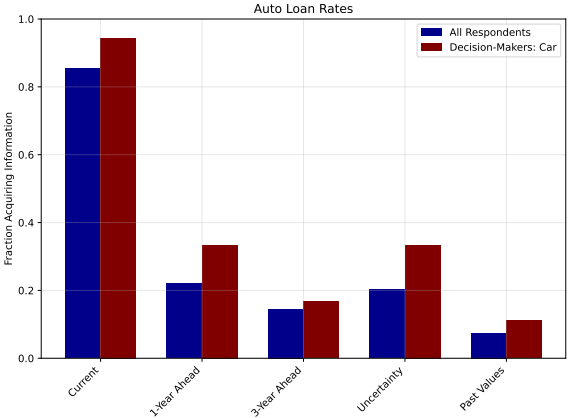
Heterogeneity in Information Acquisition of Owners



◂ Back: IA ◂ Back: Additional Results

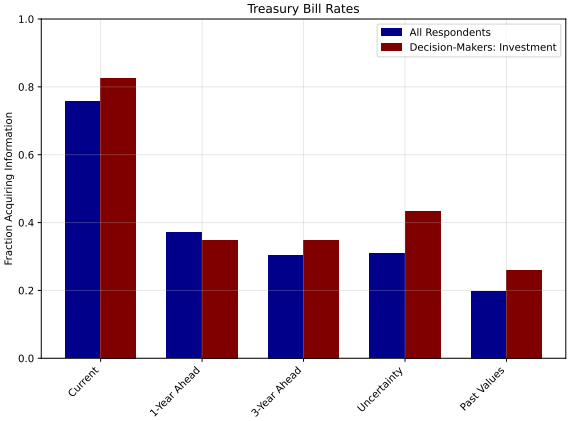
IA is Primarily about Current Values of Variables





▸ Investment Decisions ◂ Back: IA ◂ Back: Additional Results

IA is Primarily about Current Values of Variables



Back

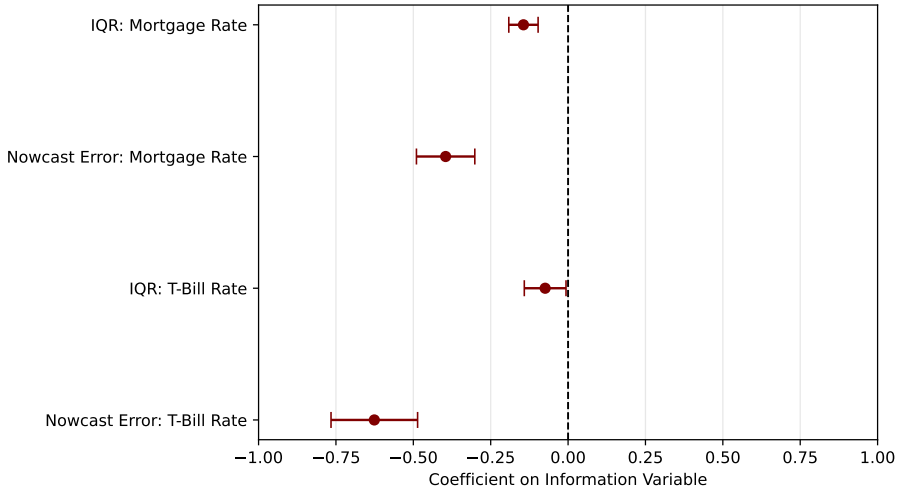
- Concern: decision-making is **endogenous** to information acquisition and beliefs
- Solution: **IV** = anticipated moves due to job relocations

Dependent Variable: Information Acquisition

Variable	OLS	First Stage	IV	OLS	First Stage	IV
Home Decision-Maker	0.30***		0.89***	0.30***		0.96***
	(0.07)		(0.34)	(0.06)		(0.34)
Job Relocation		0.23***			0.23***	
		(0.07)			(0.07)	
N	787	787	787	787	787	787
Controls				✓	✓	✓
F-stat		10.51			3.57	

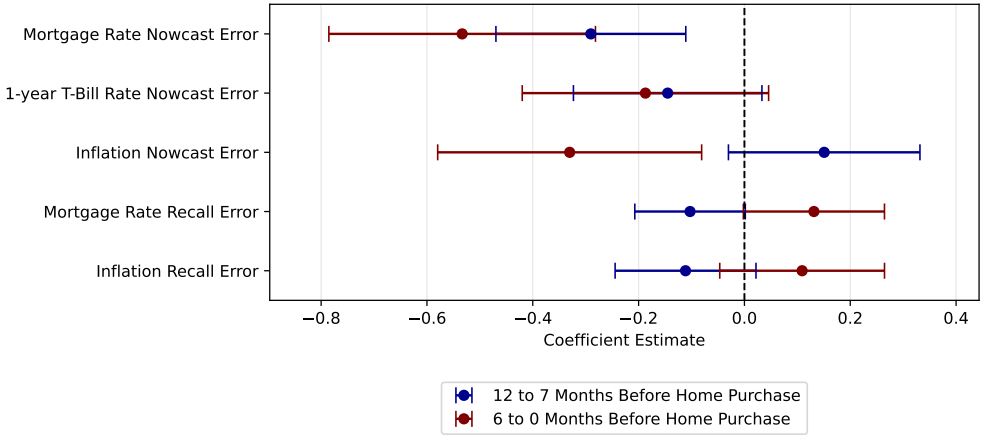
Back

Direct Association Between IA and Beliefs



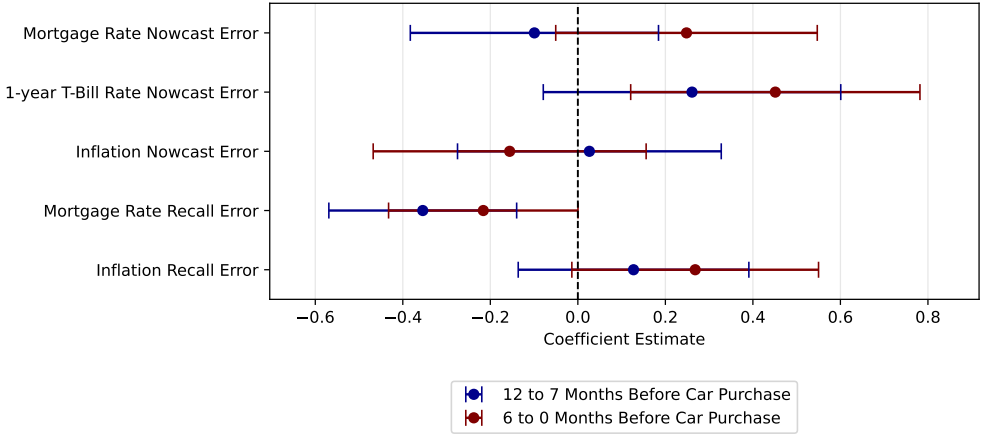
Back

Reduction in Nowcast Errors: Home Purchase



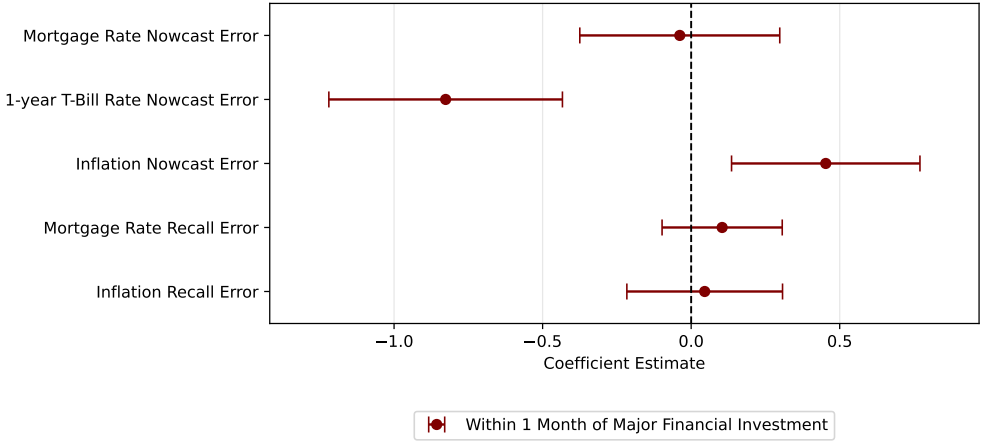
Back

Reduction in Nowcast Errors: Car Purchase



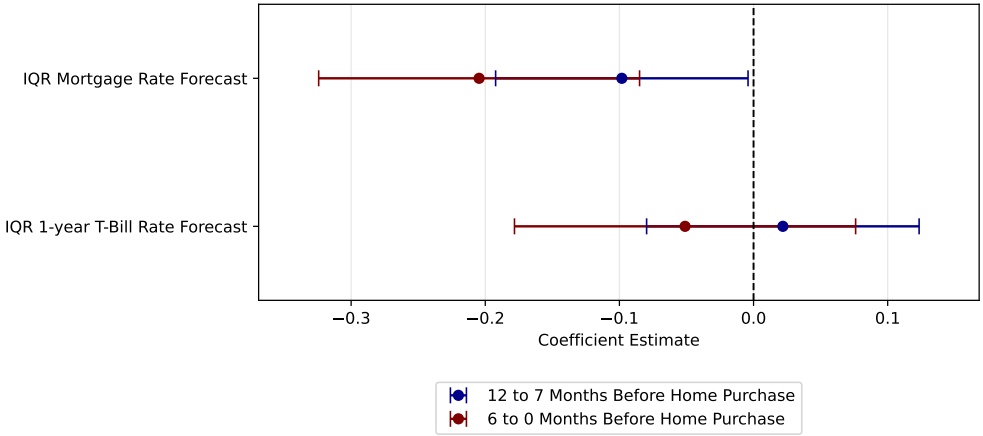
Back

Reduction in Nowcast Errors: Financial Investment



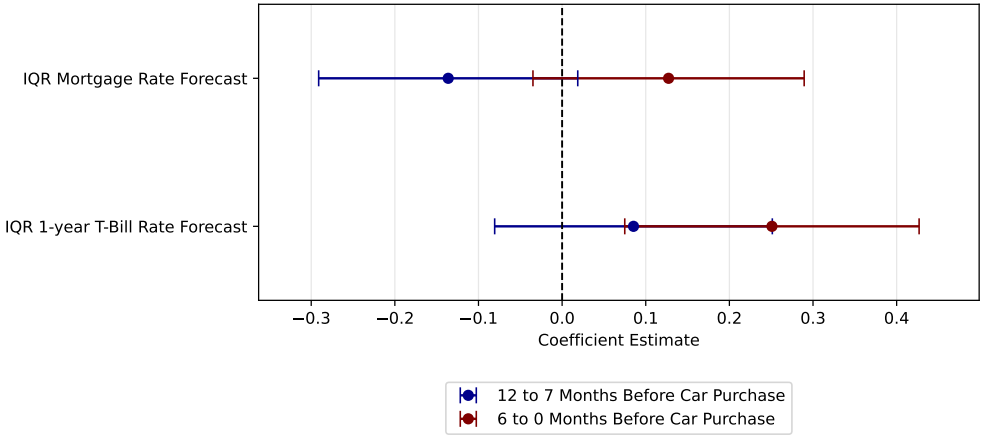
Back

Reduction in Subjective Uncertainty: Home Purchase



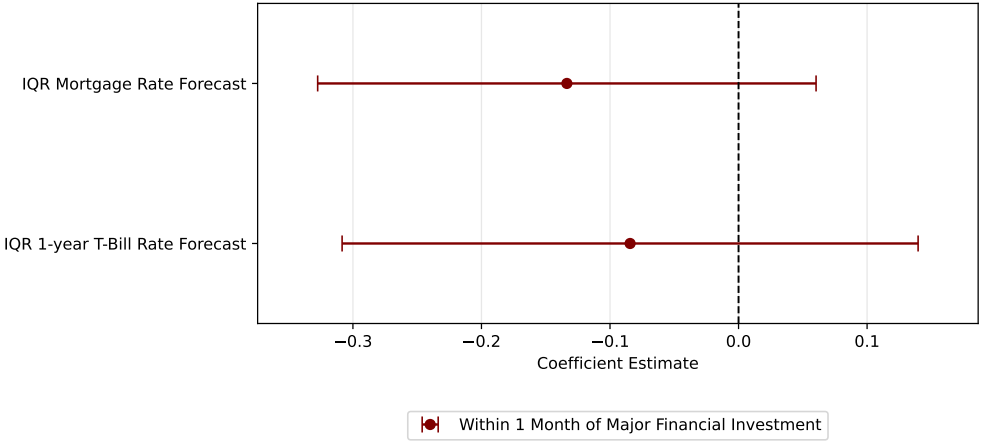
Back

Reduction in Subjective Uncertainty: Car Purchase



Back

Reduction in Subjective Uncertainty: Financial Investment



Back

Welfare Loss from Inattention

- Natural question: how large are welfare losses from selective inattention?
- Compute two welfare metrics in **basis points** of lifetime consumption
  1. **Static**: loss from not having full-information in **current** period, ignoring info. cost
  2. **Dynamic**: loss from not having full-information in **all** periods, ignoring info. cost

Back: Calibration Back: CG

Welfare Loss from Inattention

- Natural question: how large are welfare losses from selective inattention?
- Compute two welfare metrics in **basis points** of lifetime consumption
  1. **Static**: loss from not having full-information in **current** period, ignoring info. cost
  2. **Dynamic**: loss from not having full-information in **all** periods, ignoring info. cost
- Losses are **small**, but still have aggregate effects! Akerlof-Yellen 85 Maćkowiak-Wiederholt 15

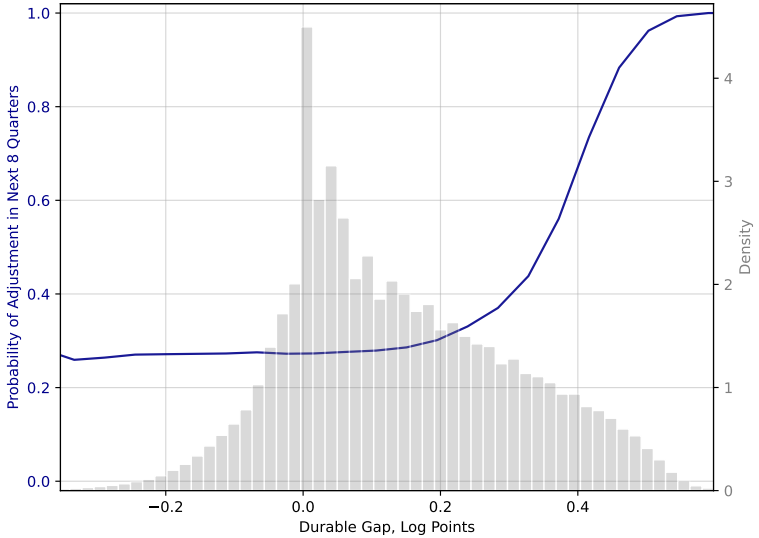
	Static	Dynamic
Mean	0.03	2.17
Median	0.02	1.9

◂ Back: Calibration ◂ Back: CG

	Mean	SD	P10	P50	P90
Assets/Income: b/y	3.51	4.93	-0.91	1.91	10.27
Durable/Non-Durables: d'/c	2.55	0.40	1.99	2.58	3.01
Durables Gap	0.14	0.17	-0.05	0.11	0.38
Acquired Information	0.23	0.42	0.00	0.00	1.00
Kalman Gain: G	0.10	0.21	0.00	0.00	0.40
Kalman Gain Conditional on IA	0.46	0.21	0.30	0.40	0.80
Normalized Nowcast Error: $\lvert\hat{\mathbb{E}}(r) - r\rvert/\lvert r\rvert$	0.28	8.00	0.02	0.10	0.32
Normalized Prior Variance: Σ/σ_r^2	0.33	0.17	0.13	0.30	0.57

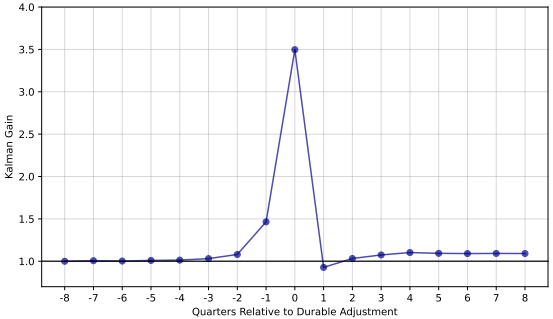
Back

Adjustment Probability as a Function of Durables Gap

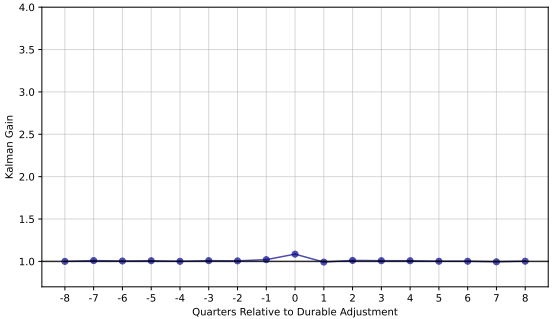


Back

Baseline: $\psi = 0.63$

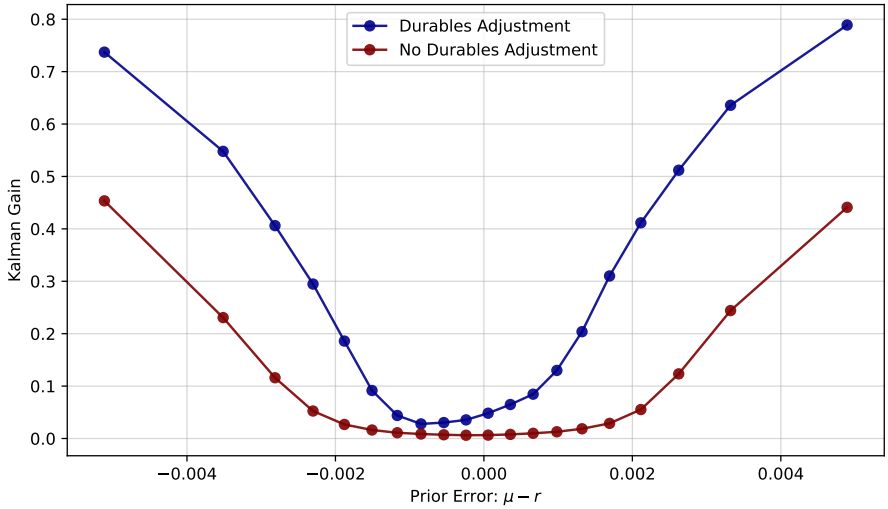


Low Durables Share: $\psi = 0.99$



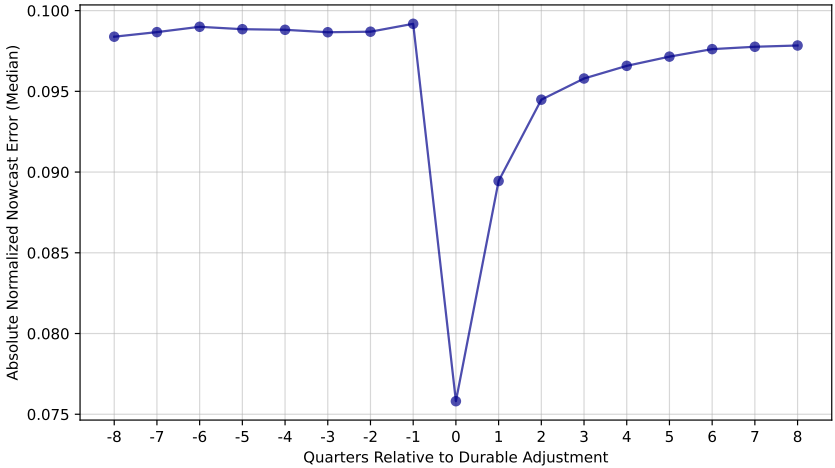
Back

Durables Adjustment Shift sS Bands of Info. Acqusition



Back

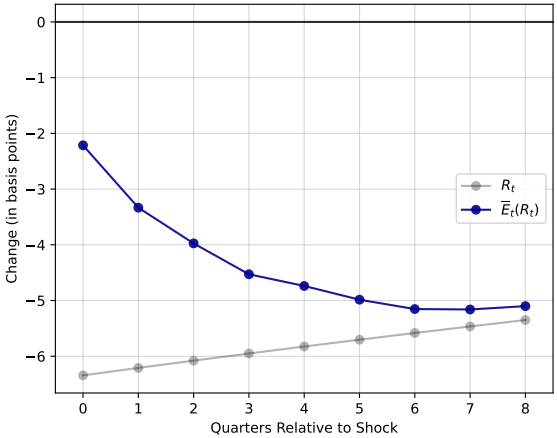
NOWCAST ERRORS IN EVENT-TIME

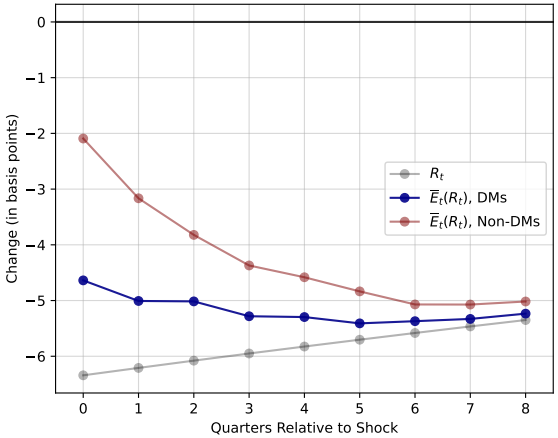


Forecast errors remain lower **post-choice** because beliefs are a “stock” not “flow”

Back

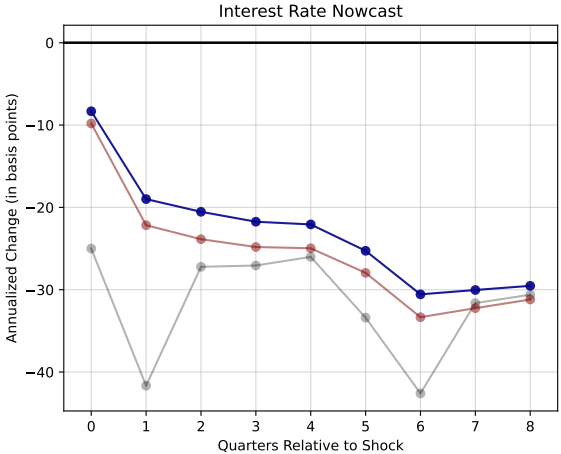
Decomposition of Aggregate Belief Response

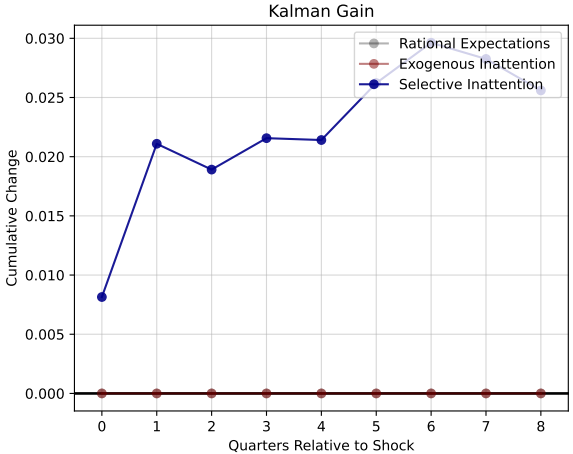




Back

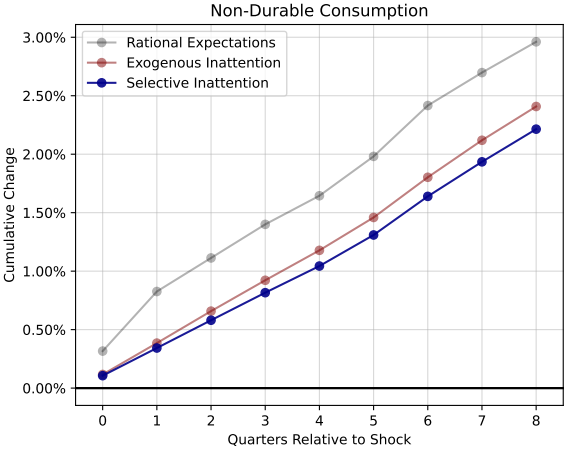
IRFs to Romer-Romer Shock with Agg. Y and P Response

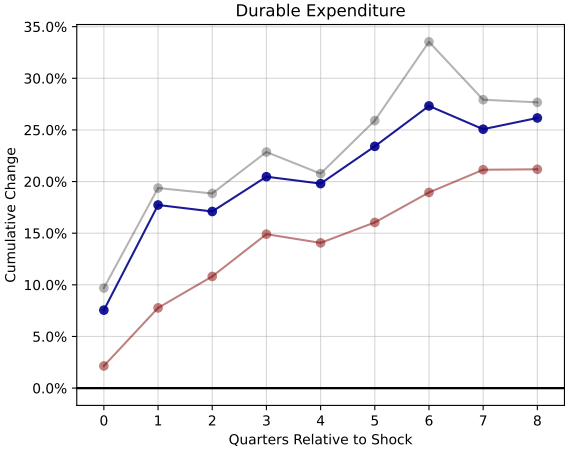




Back

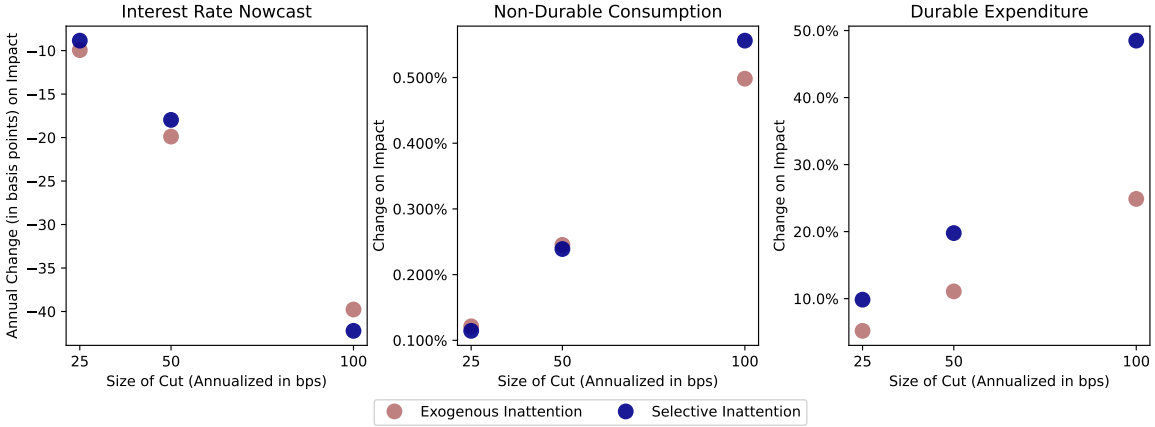
IRFs to Romer-Romer Shock with Agg. Y and P Response





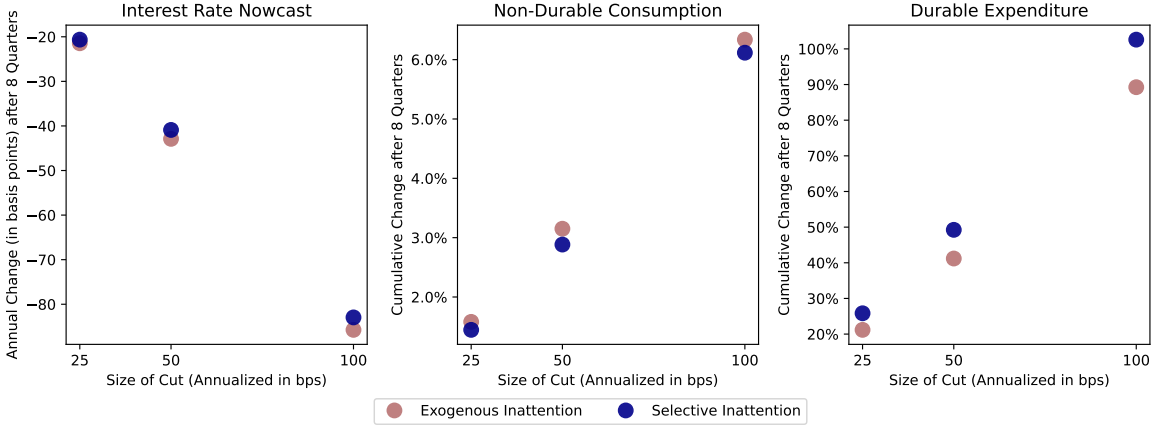
Back

Non-Linear Impact of Rate Cuts: On Impact



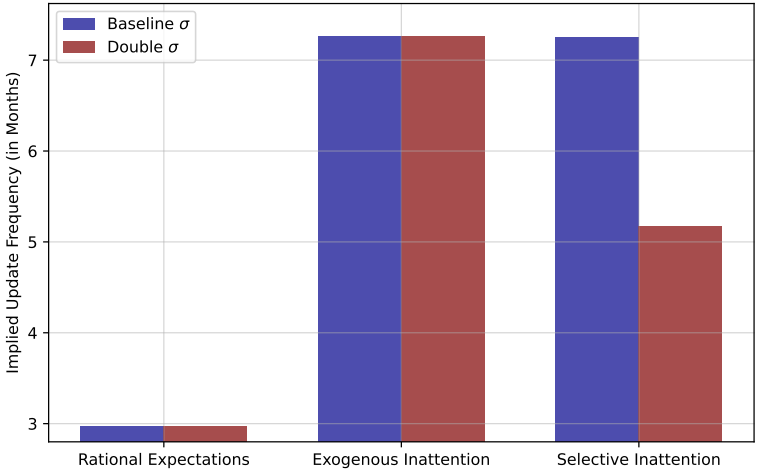
Back

Non-Linear Impact of Rate Cuts: After 8 Quarters



Back

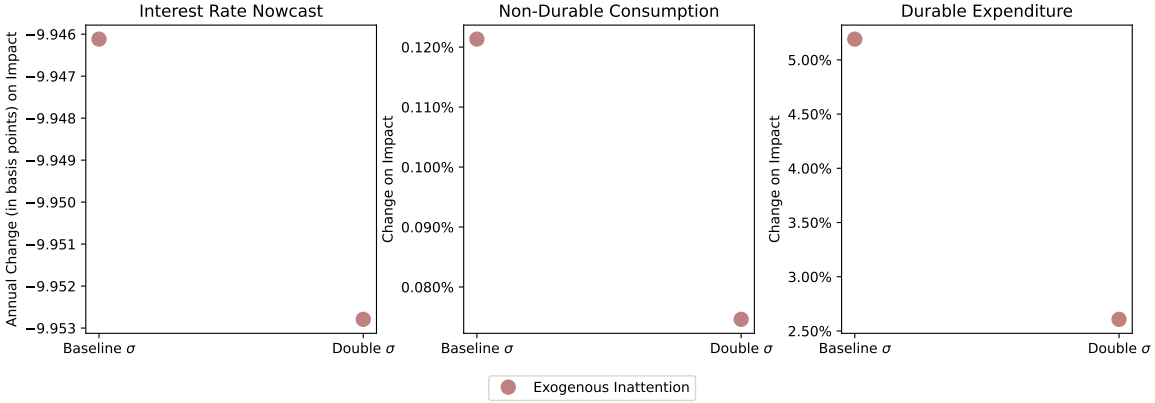
Effects of Increase in Volatility on Beliefs



Increase in volatility $\Rightarrow$ more information acquisition $\Rightarrow$ **less** belief rigidity

Back

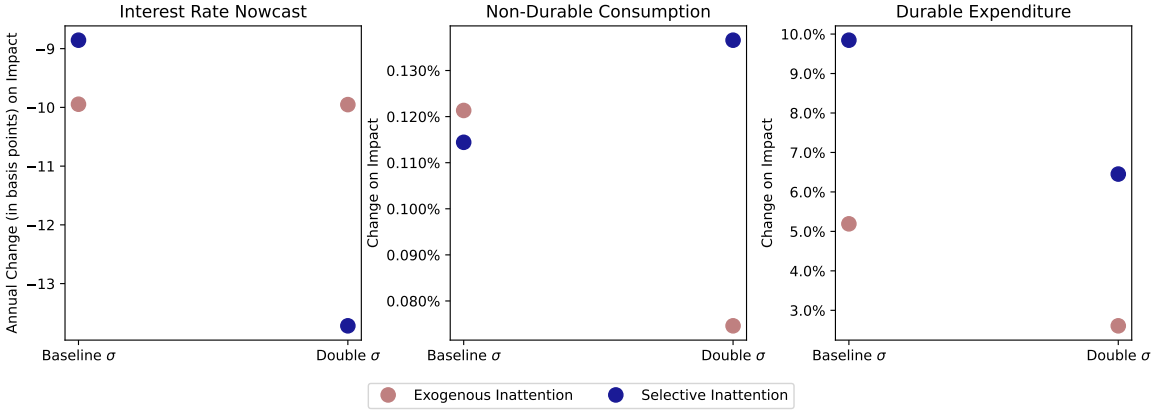
State-Dependence on Volatility: On Impact



Increase in volatility $\Rightarrow$ consumption is less responsive to interest rates

Back

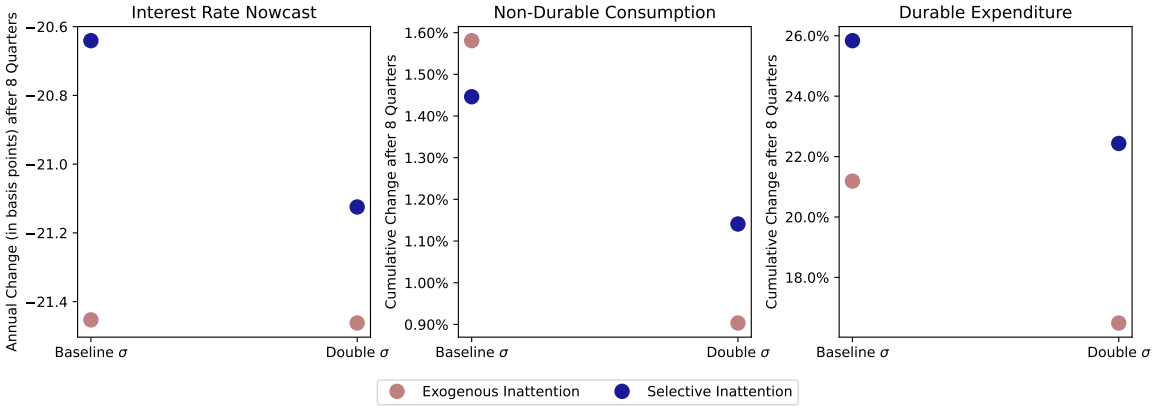
State-Dependence on Volatility: On Impact



... but not with **selective inattention** because of increased info. acquisition!

Back

State-Dependence on Volatility: After 8 Quarters



Back