A MODERN HISTORY OF INFLATION AS CONFLICT

Friedrich Geiecke
London School of Economics

Rustam Jamilov
University of Oxford

Conference "Inflation, Inflation Expectations, and Policy: New Perspectives"

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MOTIVATION

▶ Theoretical links between conflict and inflation - Rowthorn (1977) "Conflict, inflation and money", Lorenzoni and Werning (2023a) "Inflation is conflict"

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▶ This project: Study empirical evidence of these mechanisms with the help of long-run textual data

LITERATURE

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▶ Very active current literature, e.g.: Lorenzoni and Werning (2023a,b), Wildauer et al. (2023), van der Ploeg and Willems (2024), Guerreiro et al. (2024), or Beaudry et al. (2023)

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    ■ Key prices: Wages and prices of goods and services

    ■ Key stakeholders: Employers vs employees

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- Coverage: September 1851 - present

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► Work in progress: Population of articles and most recent models

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▶ Minimal prompt may lead to ambiguity, extensive prompt to overfitting on test articles

▶ Asking the LLM to adopt a persona can point it to relevant parts of its knowledge space

▶ Even if only one *bit* of information is required per article eventually (conflict or not), asking the LLM to reason can improve decisions

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► Vast background knowledge of model can help with short article texts in difficult cases

► Drawbacks of approach: Most capable LLMs are typically proprietary and get updated often; models are inherently probabilistic

► Validation of a particular model, prompt, and task vs. human labellers is important before scaling

PROMPT ENGINEERING: PERSONA SHAPING

1. System prompt

"You are a professor of economic history at a top US research university. You study disagreement over prices or wages between stakeholders"

PROMPT ENGINEERING: BASELINE

2. Step 1: Main prompt

"Does the excerpt mention disagreement or conflict between stakeholders over prices or wages in the United States? If it does, please explain why in one sentence. If it does not or if the text contains insufficient information, please only reply with 'No'."

PROMPT ENGINEERING: COMPONENTS

3. Step 2: Component (decomposition) prompt

"Given the following excerpt from the New York Times, please analyze and identify which category is the best fit. Only reply with its associated number '1', '2', etc."

PRICE COMPONENTS

1. "Disagreement over wages"

2. "Disagreement over prices of goods or services"

3. "Disagreement over real estate prices"

4. "Disagreement over central bank interest rates"

5. "Disagreement over other asset prices"

6. "Disagreement over tariffs"

7. "Disagreement over other taxes"

8. "None of these or insufficient information"

STAKEHOLDER COMPONENTS

1. "Disagreement between employees or their unions and employers"

2. "Disagreement between consumers and companies"

3. "Disagreement between non-financial companies"

4. "Disagreement between investors"

5. "Economic disagreement between stakeholders and governmental institutions"

6. "None of these or insufficient information"

CASE STUDIES

ID	Yr	Headline	Paragraph	H	M	Model Justification
5	1922	RIOTING BREAKS OUT IN RAILROAD STRIKE; Union and Non-Union Men of Western Maryland Line Fight in Hagerstown		1	1	Yes, the excerpt mentions disagreement between stakeholders over wages in the United States, as the rioting between union and non-union men during the railroad strike likely stemmed from disputes over wage levels.
17	1972	Anti-Inflation Plan Backed	Natl Fed of Ind Business repts poll of its members finds that 91% support Nixon Adm's plan to combat inflation by restraining wages and prices	1	1	Yes, the excerpt mentions disagreement between stakeholders over prices or wages in the United States as it highlights the support of the Nixon Administration's plan to restrain wages and prices, indicating a potential conflict between labor and business interests.

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ID	Yr	Headline	Paragraph	H	M	Model Justification
7	1851	COTTON.–Some of the Southern papers are discussing and recommending a scheme for enhancing the value of Cotton. The plan is to form a company, with a capital of $20,000,000, to receive all the Cotton produced in the United States and sell it, guaranteeing to the owner eleven cents a pound, and withholding it from the market whenever it will not bring that price		1	1	Yes, the excerpt mentions disagreement between stakeholders over prices in the United States as some Southern papers are discussing and recommending a scheme to enhance the value of cotton by guaranteeing a specific price, which may not align with the market forces or individual sellers' preferences.

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ID	Yr	Headline	Paragraph	H	M	Model Justification
18	1989	As Berlin Wall Totters Symbolically, Europeans Brace for Economic Impact'	As thousands of East Germans continue to pour into West Germany from Czechoslovakia, the European Community is beginning to ponder the prospect of something the West has demanded for 28 years: the demolition of the Berlin wall, built in 1961 to keep East Germans from fleeing to the West. In effect, by allowing	0	0	No
3	2023	'The Return of Superpower Conflict'	What's different about this diplomatic drama with Russia.	0	0	No
2	2023	Economists Pin More Blame on Tech for Rising Inequality	Recent research underlines the central role that automation has played in widening disparities.	0	0	No

AGGREGATION

▶ Baseline index of price conflict

$$\mathcal{C}_t = \frac{\sum\limits_i^{N_t} c_{i,t}}{N_t}$$

▶ $c_{i,t}$: Binary output from the LLM (1 if price conflict)

▶ N_t: Number of articles per quarter

A NOVEL MEASURE OF PRICE CONFLICT

Price Conflict — Abs. Value of GDP Deflator Changes --- NBER Recessions
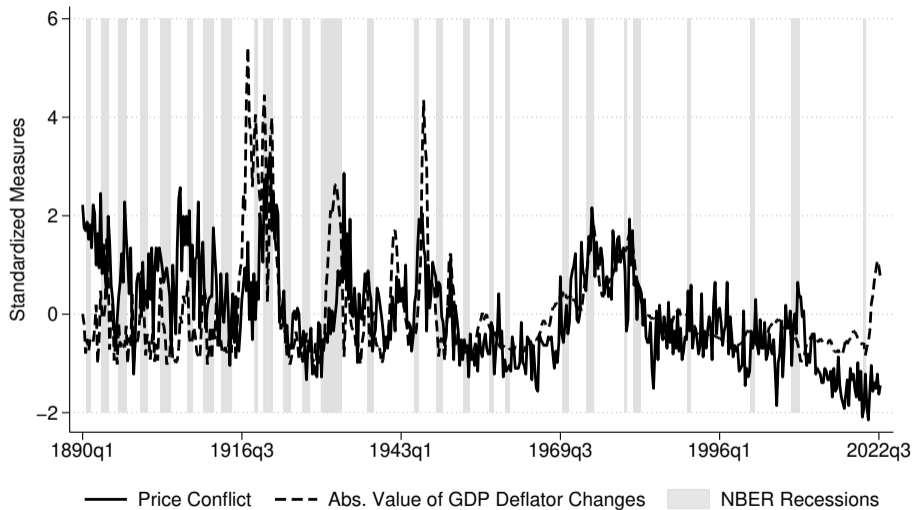
CONFLICT BY PRICE TYPE

(A) Wages
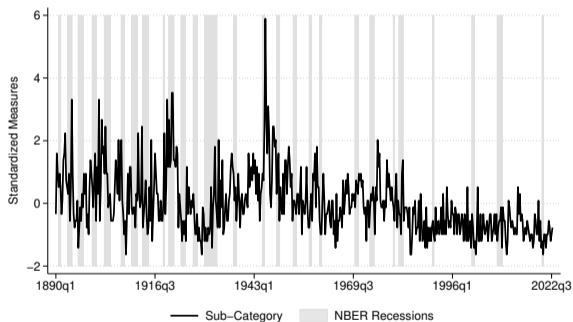
(B) Prices of Goods or Services
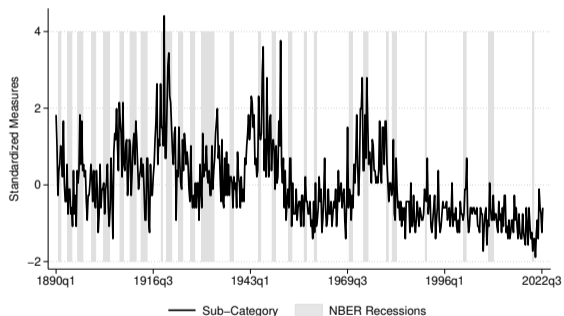
CONFLICT BY PRICE TYPE

(C) Interest Rates
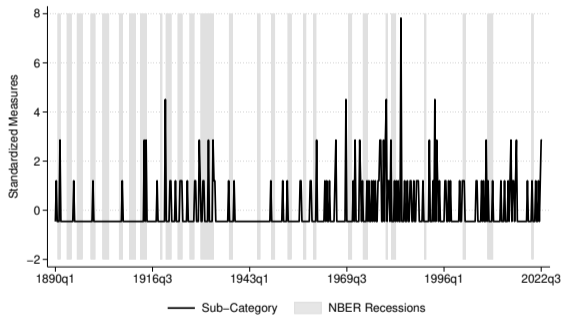
(D) Tariffs
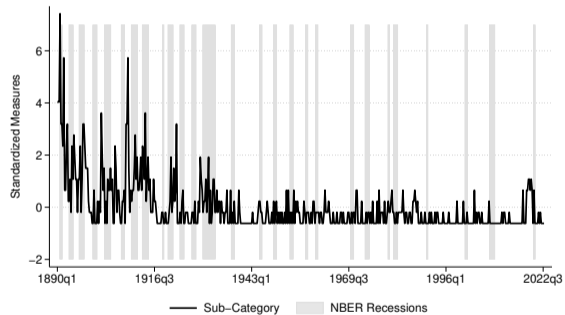
CONFLICT BY STAKEHOLDER TYPE

(E) Employees vs Employers
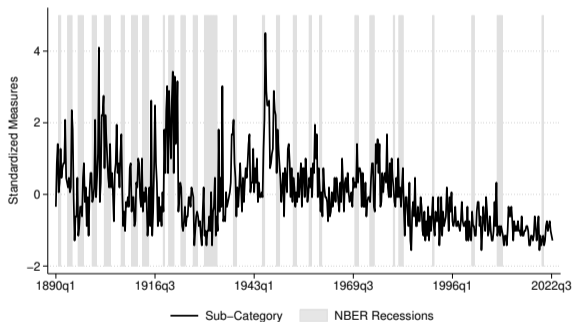
(F) Consumers vs Companies
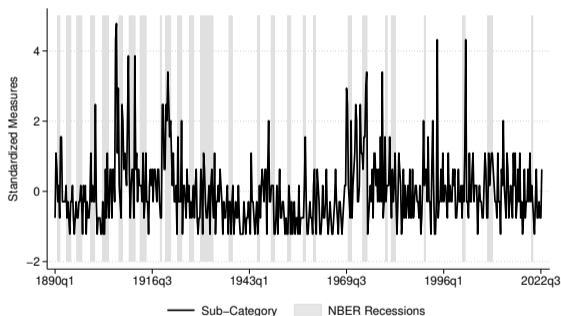
CONFLICT BY STAKEHOLDER TYPE

(A) Between Investors
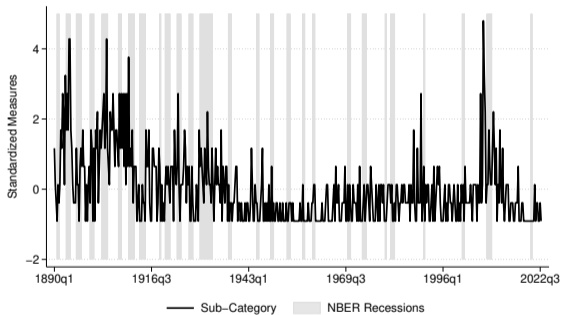
(B) Stakeholders vs Government
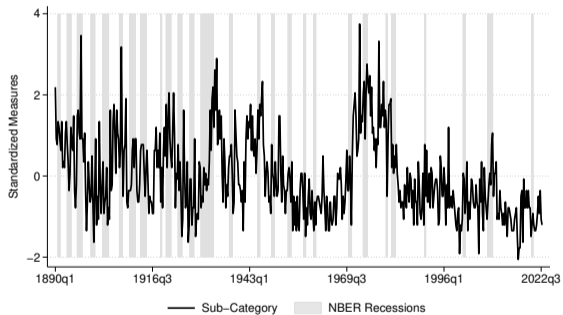
PRICE CONFLICT SHOCKS AND THE MACROECONOMY

▶ Dynamic effects of price conflict shocks on prices and quantities

▶ Jordá (2005) local projections

$$Y_{t+h} = \delta + \sum_{\ell=0}^{L} \beta_{\ell h} \times \tilde{\mathcal{C}}_{t-\ell} + \sum_{\ell=1}^{L} \gamma_{\ell h} \mathbf{X}_{t-\ell} + u_{t+h}$$

▶ $\tilde{\mathcal{C}}_t$: Price conflict shock. First-differenced $\mathcal{C}_t$

▶ $\mathbf{X}_t$: Abs. value of GDP deflater changes, real GDP growth, short-term interest rate, market return, unemployment rate. Robustness with more controls

▶ L: 4 in baseline, robustness up to 16

PRICE CONFLICT SHOCKS

Price Conflict Shocks ——— NBER Recessions
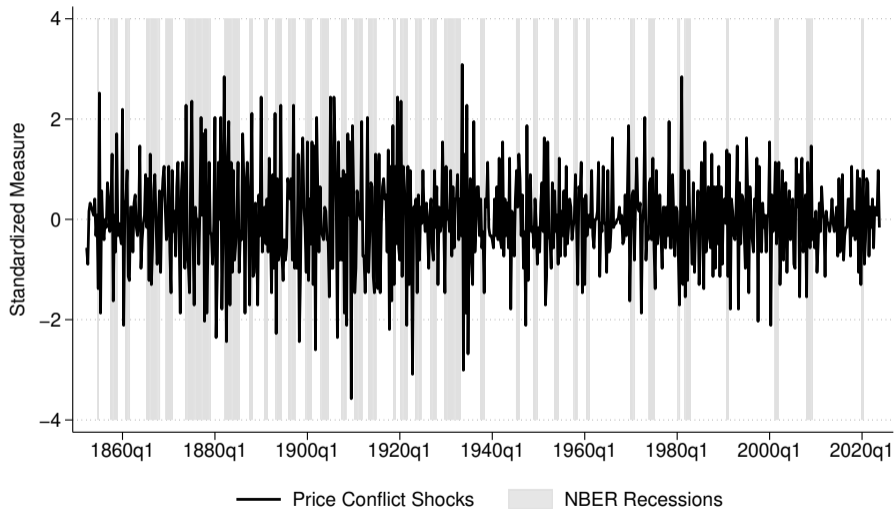
MACRO-HISTORICAL CONTROLS

(A) Real GDP Growth
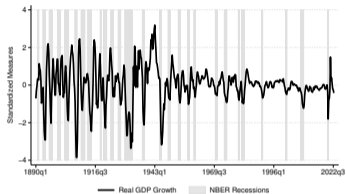
(B) Short-term Interest Rate
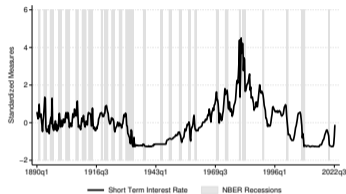
(C) S&P 500 Index Returns
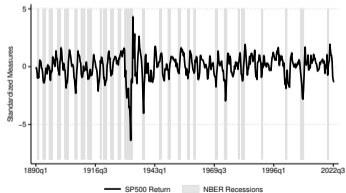
(D) Unemployment Rate
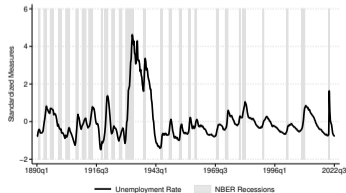
RESULTS

(A) Dep. Var.: Abs. Value of GDP Price Deflator Inflation
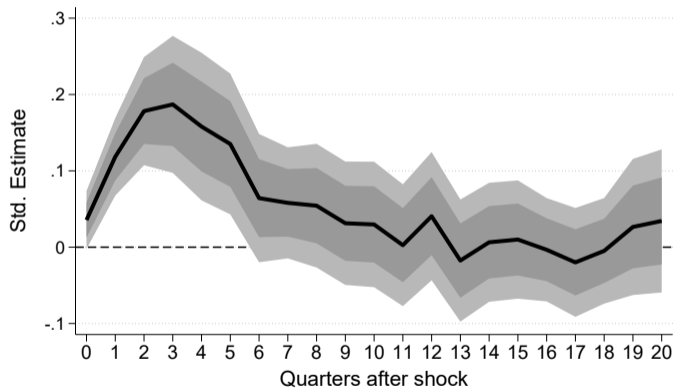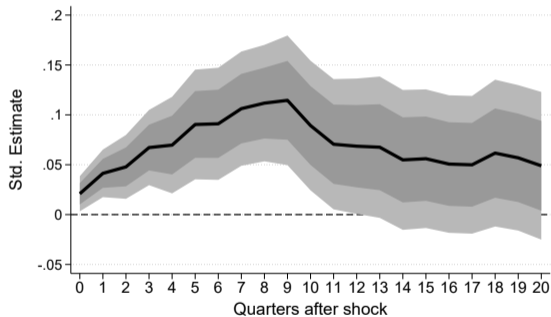
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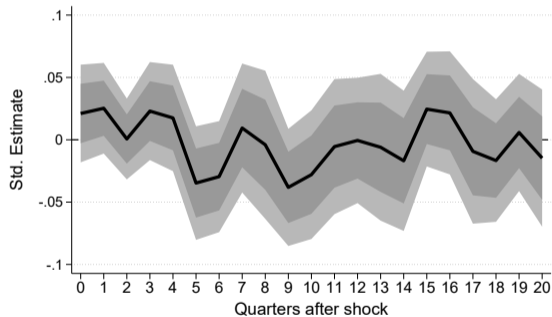(A) Dep. Var.: Real GDP Growth
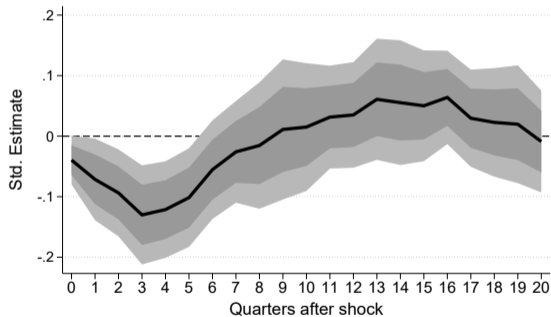
(B) Dep. Var.: Stock Returns
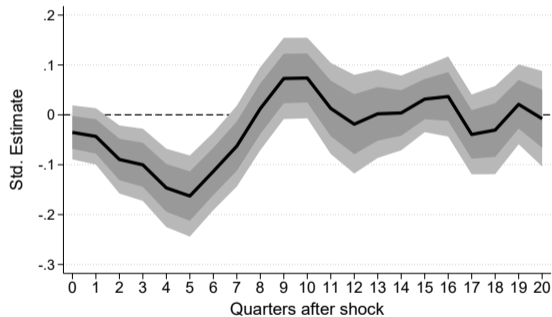
RESULTS

(A) Dep. Var.: Unemployment Rate

(B) Dep. Var.: Short-term Interest Rate

RESULTS BY PRICE COMPONENT
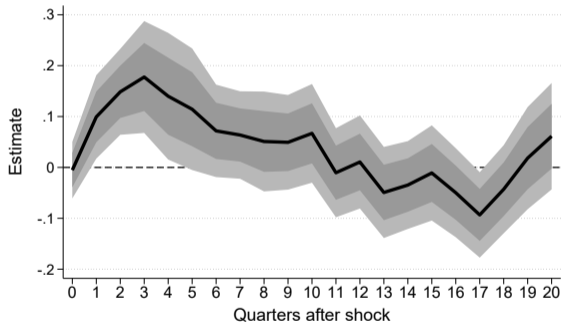
(A) Wages
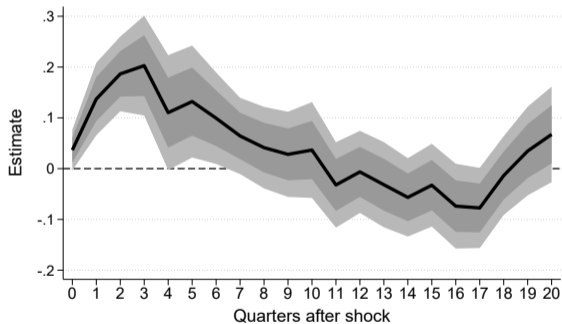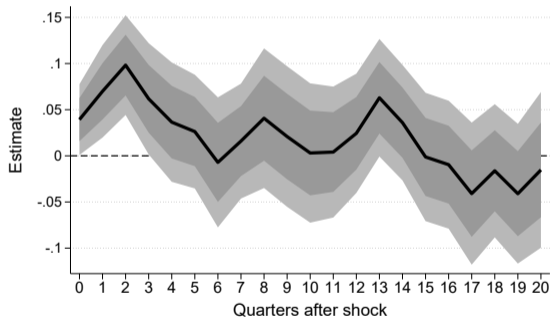
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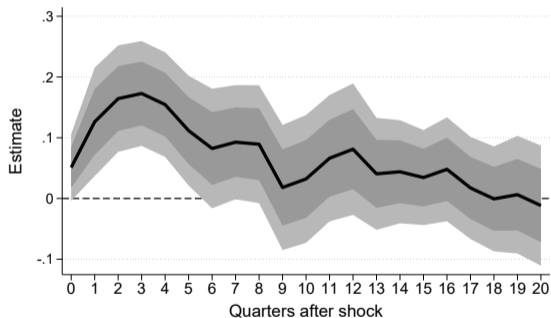
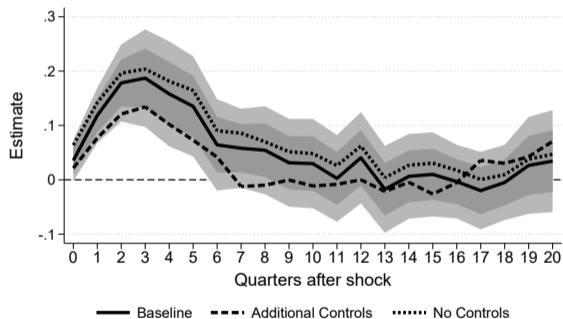# RESULTS BY STAKEHOLDER COMPONENT

(A) Employees vs Employers
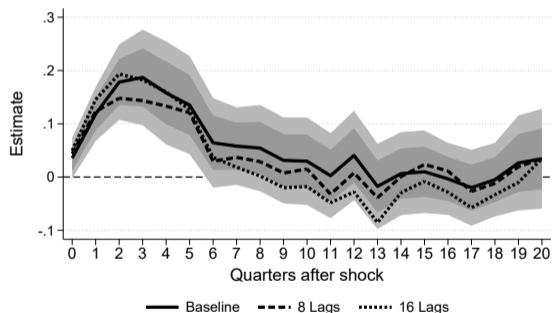

(B) Consumers vs Companies

ROBUSTNESS: CONTROLS AND LAGS

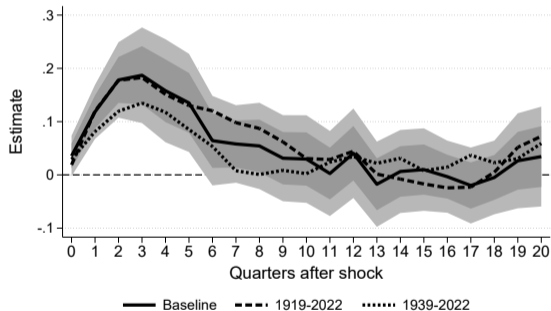### (C) Additional Controls

(D) Lag Length

ROBUSTNESS: TIME AND COMPOSITIONS

(E) Time Sample

(F) Alternative Compositions
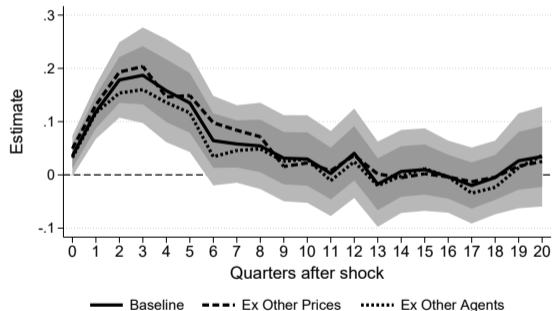
(G) Removing "inflation" and "deflation"
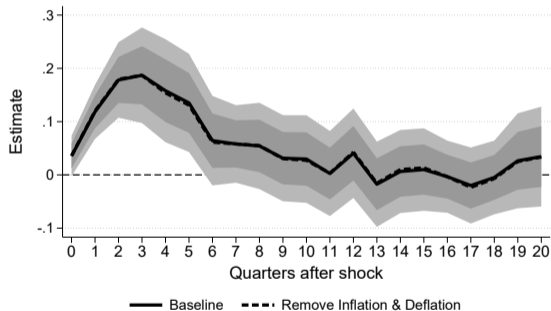
(H) Alternative Specifications
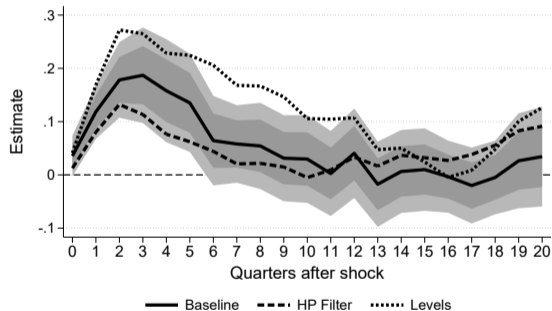
WORK IN PROGRESS AND EXTENSIONS

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▶ Intensive margin of disagreement

▶ Econometrics - asymmetric effects, higher-order inflation moments, etc.

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REFERENCES I

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__ **and** __ , "Wage Price Spirals," *Brookings Paper on Economic Activity*, 2023.

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