

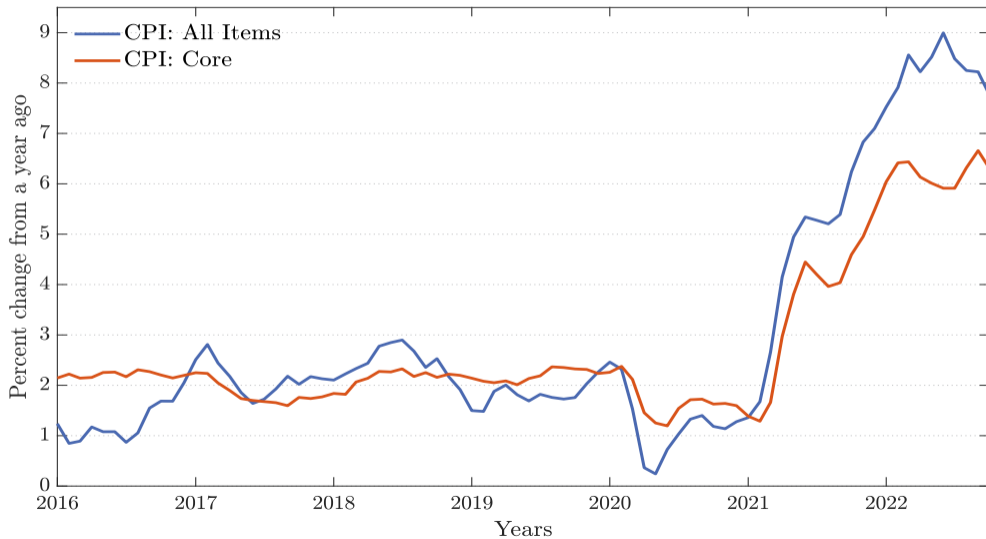
# Current U.S Inflation: Macroeconomic Drivers and Challenges

Mark Gertler

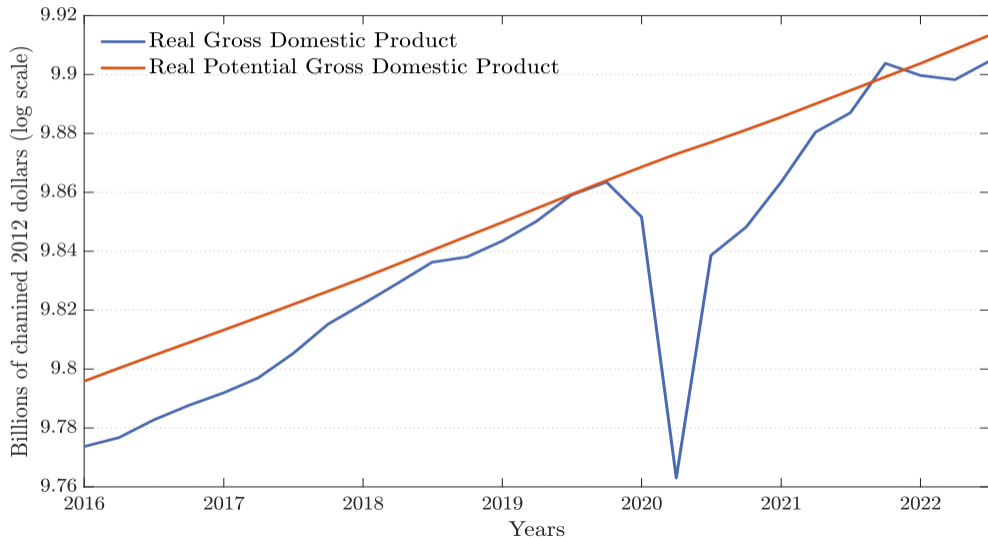
NYU

November 2022

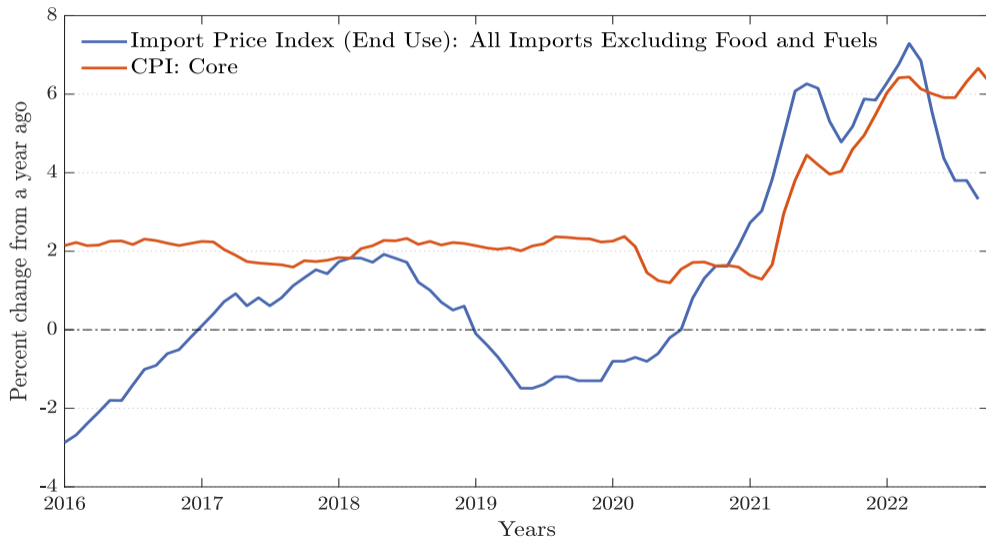
# CPI Inflation



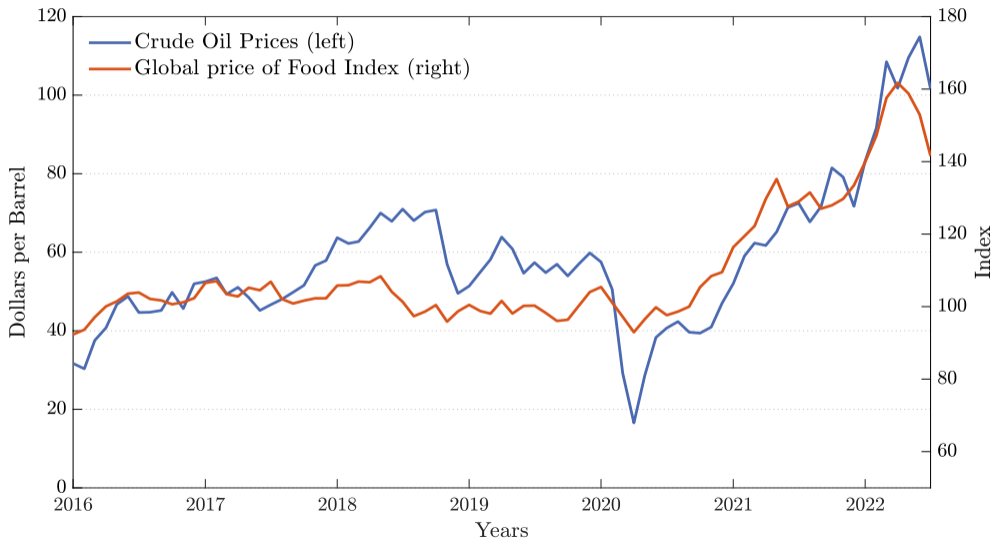
# GDP versus Potential GDP



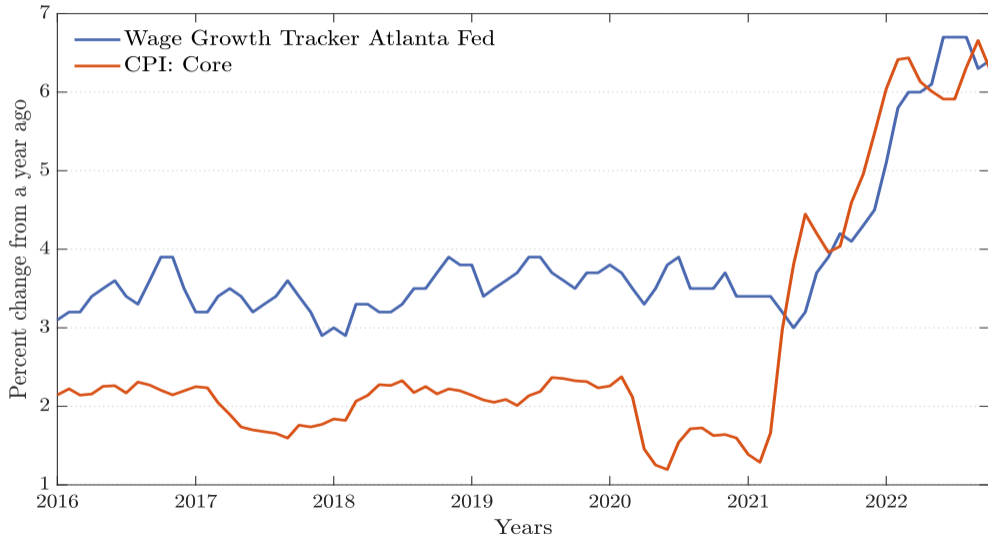
# Import Prices



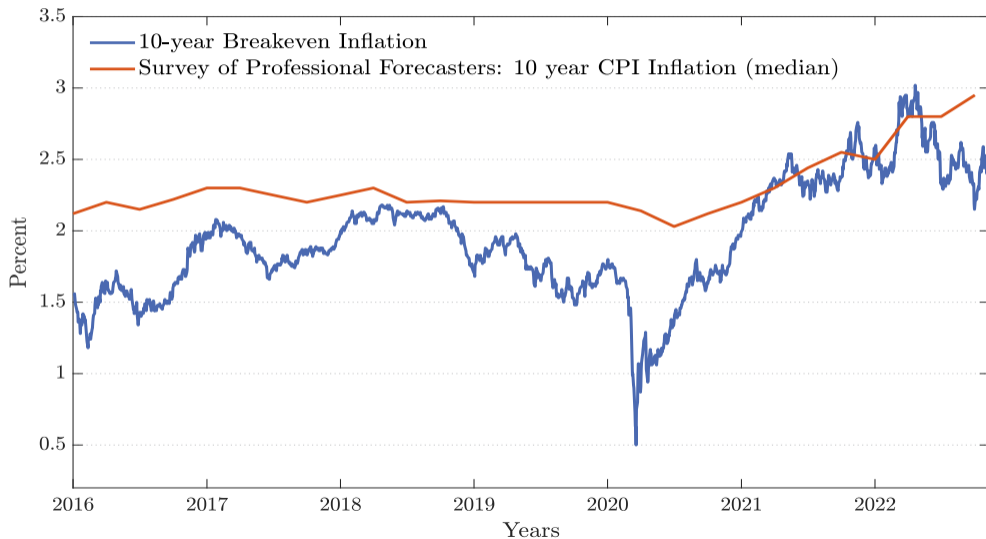
# Oil and Food Prices



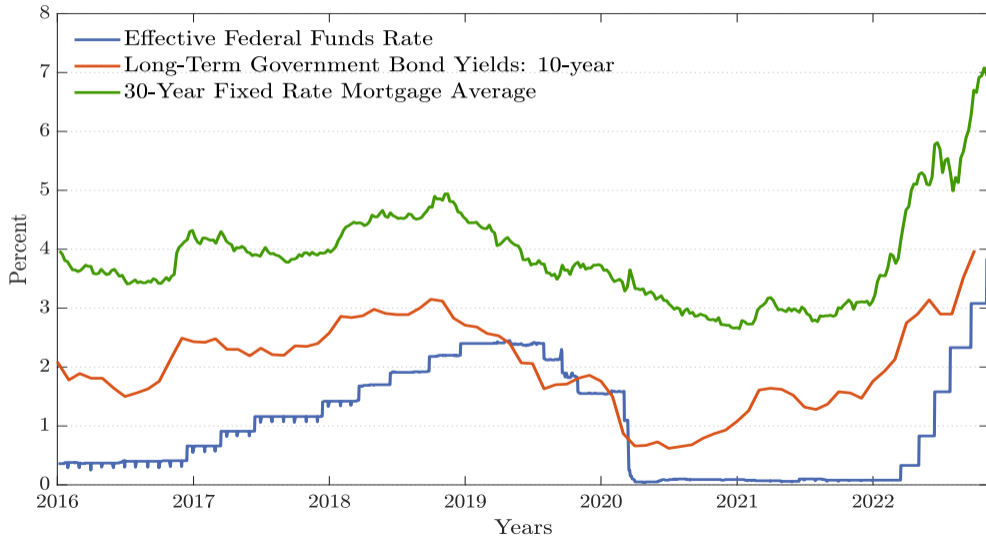
# Wages



# Long Term Inflation Expectations



# Interest Rates





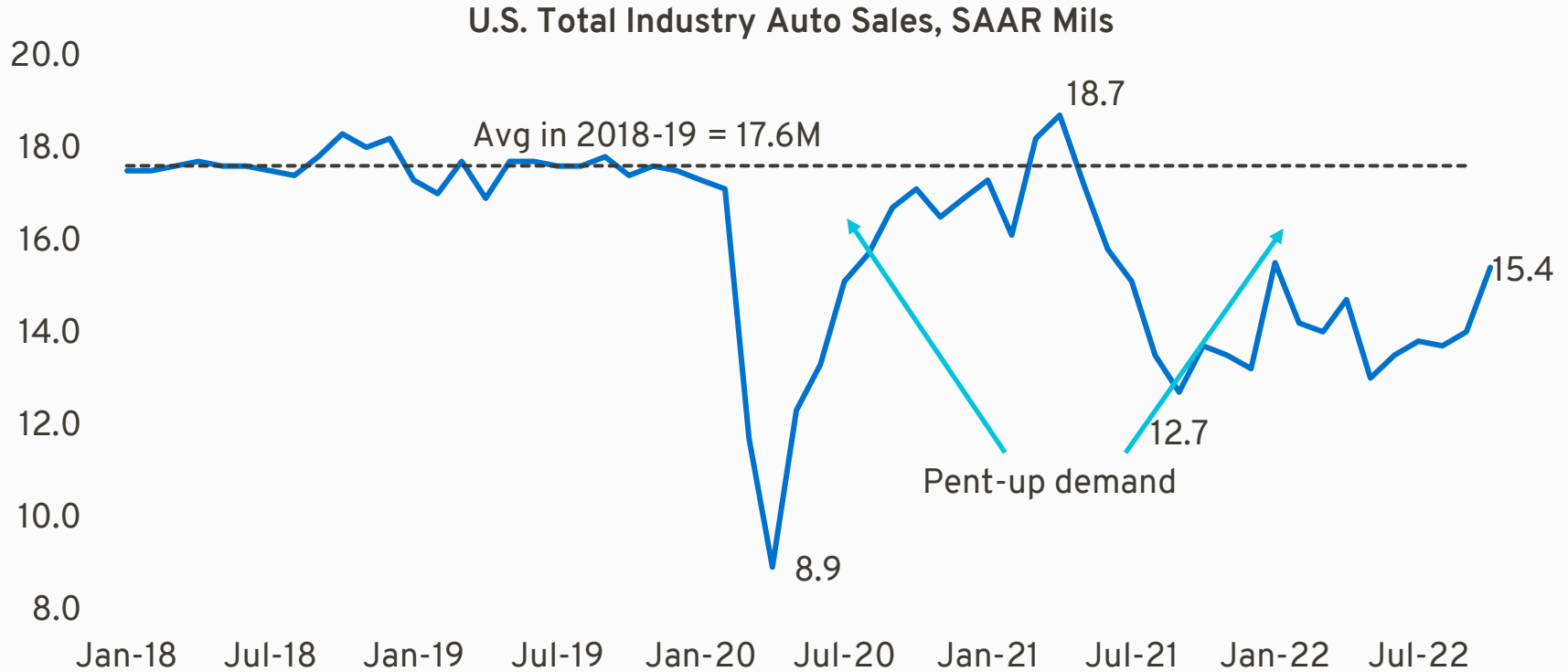


# U.S. Auto Supply Chain Update

*Drivers and Prospects for Inflation*

**Elaine Buckberg**  
**Chief Economist, General Motors**  
November 18, 2022

# Auto sales ran at a 14.1M SAAR YTD due to ongoing supply issues vs. the 2018-19 average of 17.6M

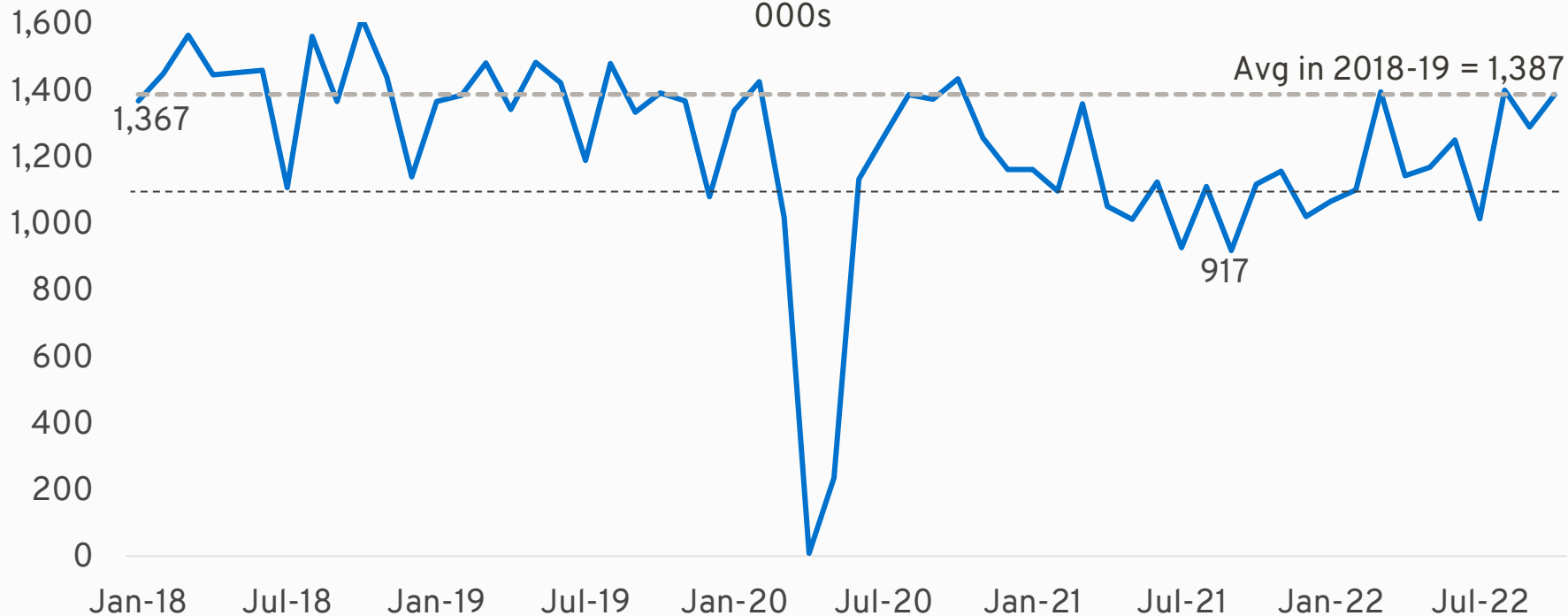


# North American auto production hit the average pre-COVID pace in two of the last three months



### North America Light Vehicle Production

000s



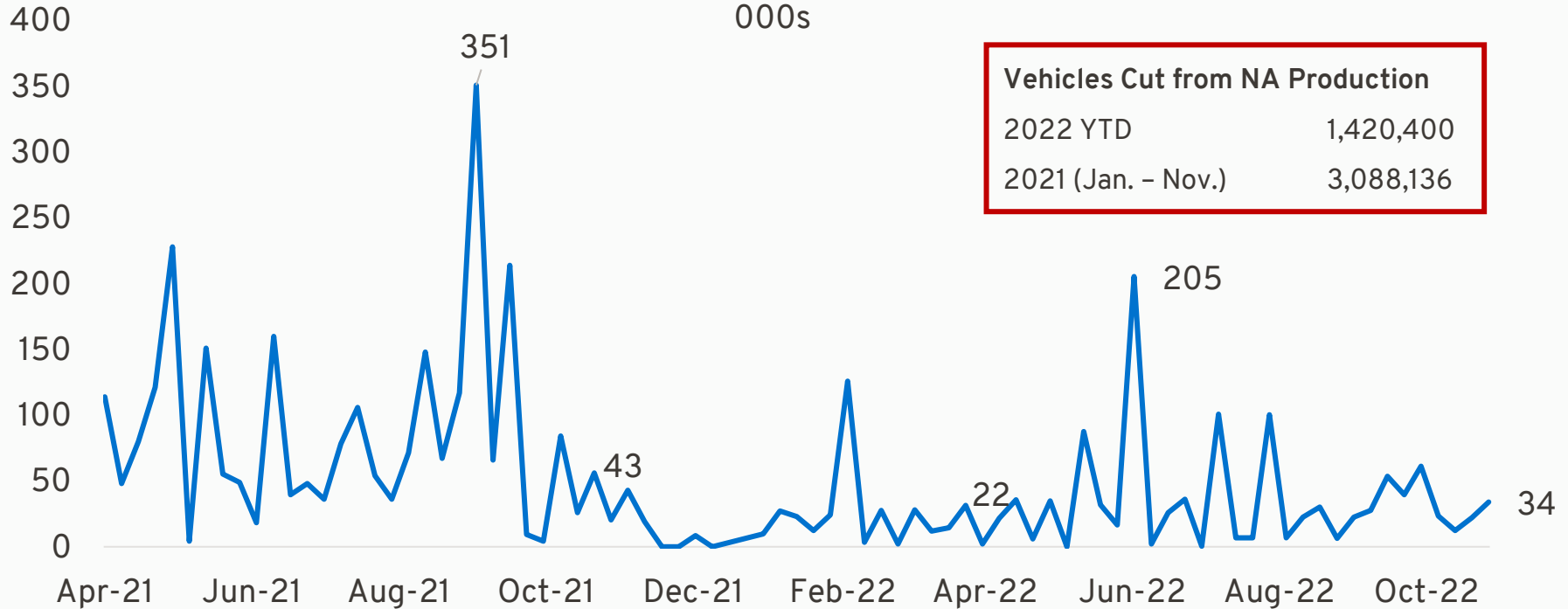
Sources: IHS Markit; actuals through September 2022; forecasts beyond  
general motors

# Plant downtime persists but 2022 YTD is half that of 2021

## Improvement is thanks to better chip supply



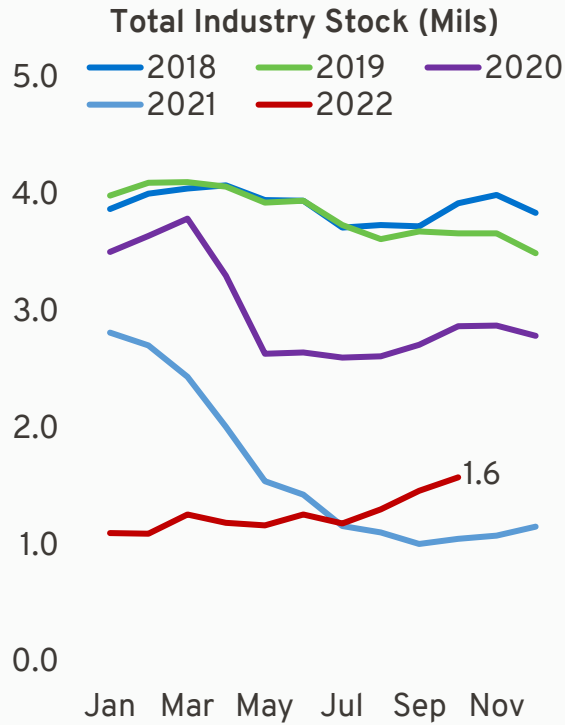
Vehicles Cut from Production in North America  
000s



Vehicles Cut from NA Production	
2022 YTD	1,420,400
2021 (Jan. - Nov.)	3,088,136

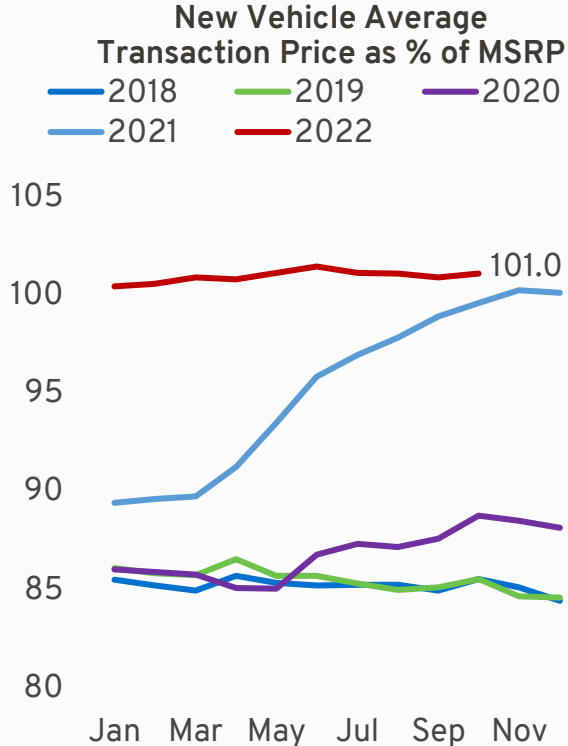


# New vehicle prices remain high, despite recent increase in inventory

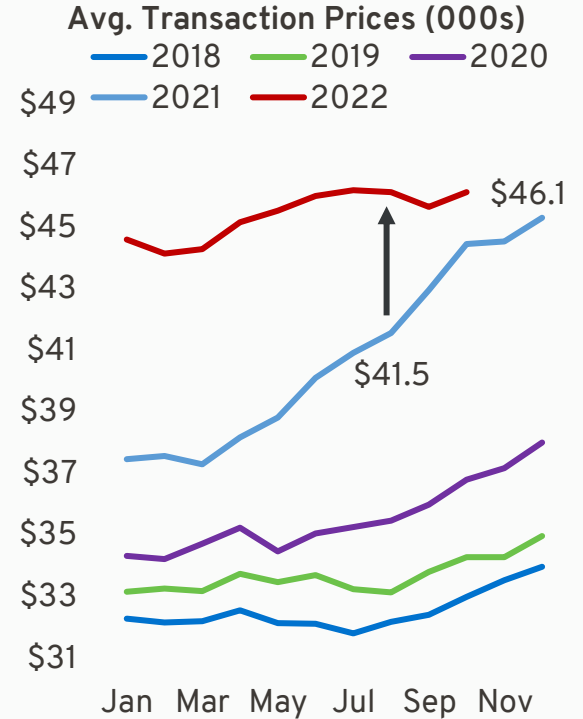


Sources: NA EZQ

general motors



Source: JD Power PIN; GM calculations

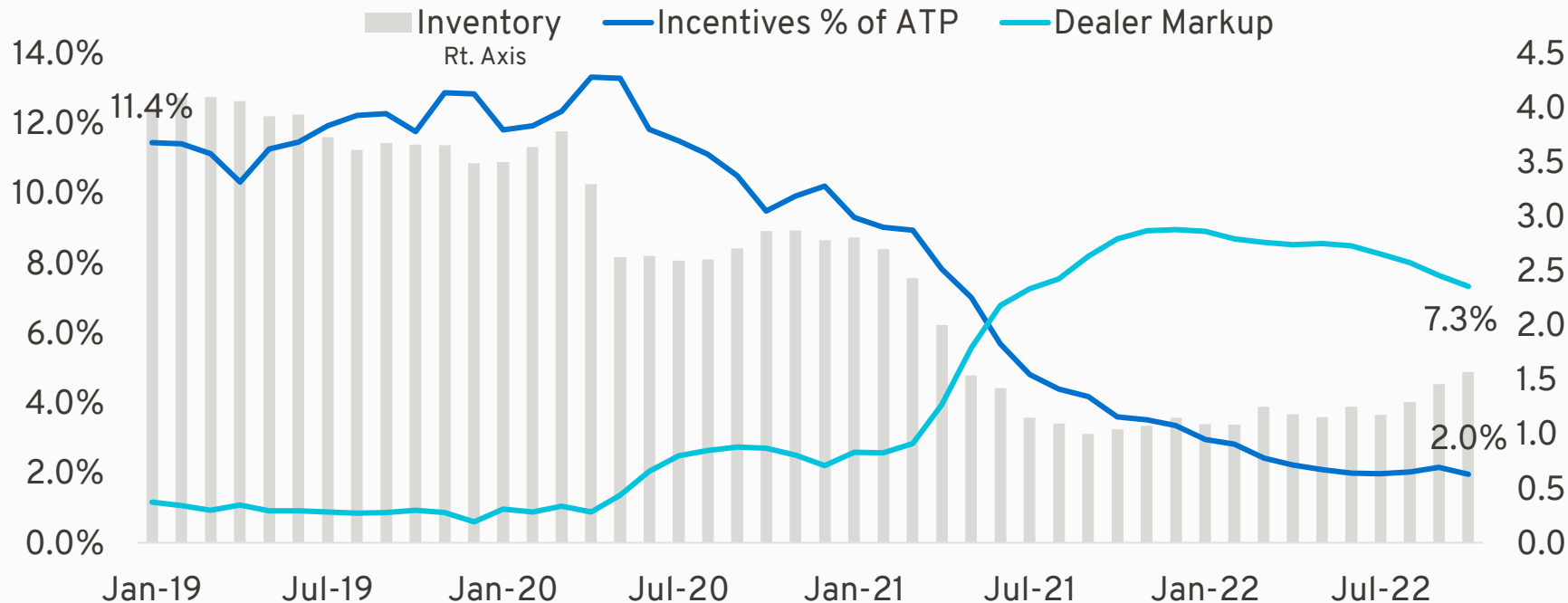


Source: JD Power PIN; Nominal Prices

# Inventories rose in Aug-Oct. Dealer markups over cost continue to grind down



Incentives % of ATP vs. Dealer Markup vs. Inventory Levels (Mils.)

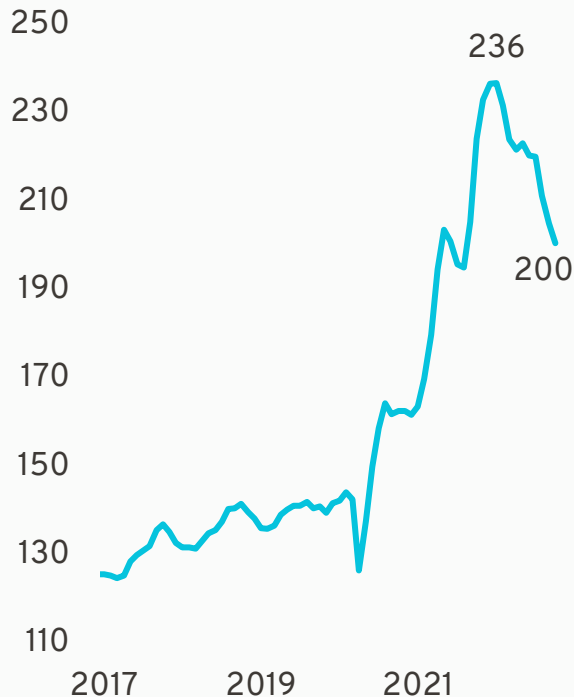


# Used vehicle prices have been falling since January

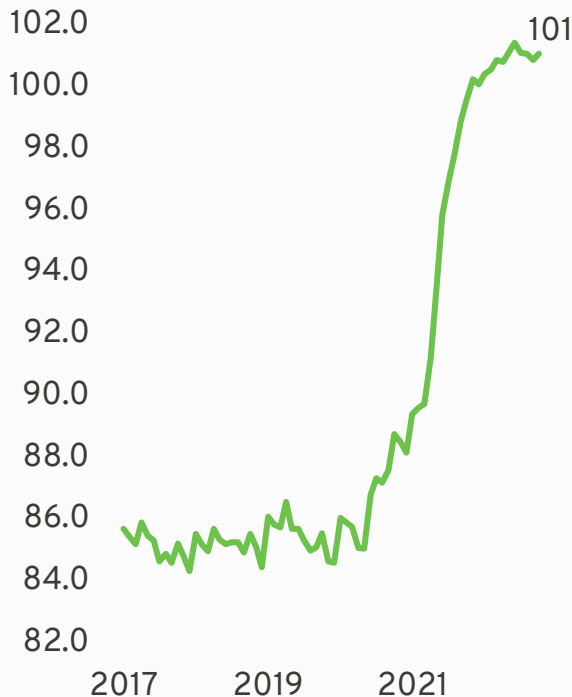
## Yet used vehicles still 13% more expensive, controlling for content and quality



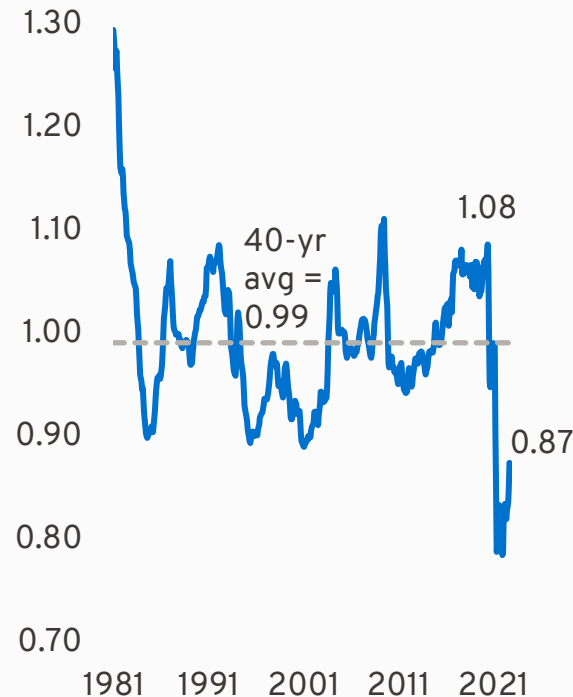
Manheim Used Vehicle Price Index  
Jan-95 = 100



New Vehicle Avg. Transaction Price  
as % of MSRP



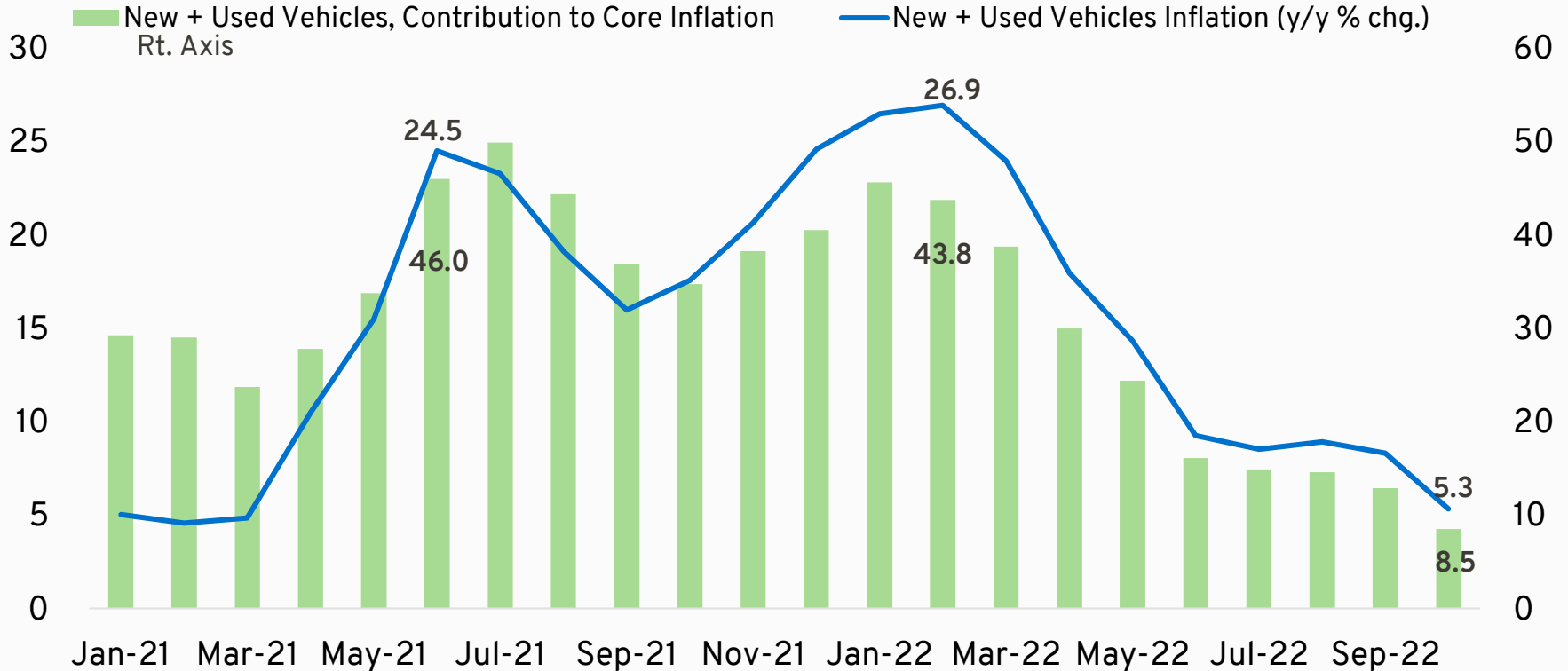
New/Used Vehicle CPI Ratio



Sources: Bureau of Labor Statistics, Manheim, JD Power PIN, Haver Analytics  
general motors

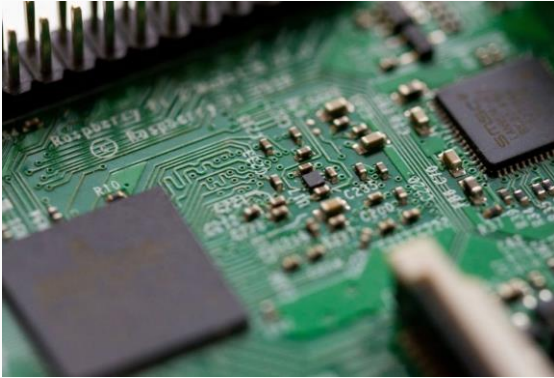


# Auto inflation has steadily dropped over 2022





## Going forward, GM is directly managing chip purchases and design for our vehicles



We are completely shifting our approach to buying chips, from buying components from our suppliers that contain chips, to directly managing all chip purchases and chip design for our vehicles.

GM sees our microprocessor requirements more than doubling over the next several years as vehicles become technology platforms.

GM's new strategy will reduce the number of unique micro controller units (MCUs) required by 95 percent to industry-leading levels.

GM partnered with 7 chip makers: Qualcomm, STMicroelectronics, TSMC, Renesas, Onsemi, NXP, Infineon.

**Much of the investment needed will flow to the U.S. and Canada.**



## Establishing a sustainable EV raw material value chain

GM is actively pursuing opportunities to localize as much of the supply chain as possible



Secure



Sustainable



Scalable



Cost Competitive

Partnerships created for lithium, cobalt, rare earths, alloy flakes, permanent magnets, and CAM.

Recycling should be primary source of battery raw materials in the long term

*Recycling today:* cobalt, nickel

*Future recycling:* cobalt, nickel, lithium, graphite, copper, manganese, and aluminum





EUROPEAN CENTRAL BANK

EUROSYSTEM

# The inflation puzzle of the green transition

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Global Research Forum,  
International Macro and  
Finance

18 November 2022

**Matteo Ciccarelli**  
European Central Bank, DGE/FPM

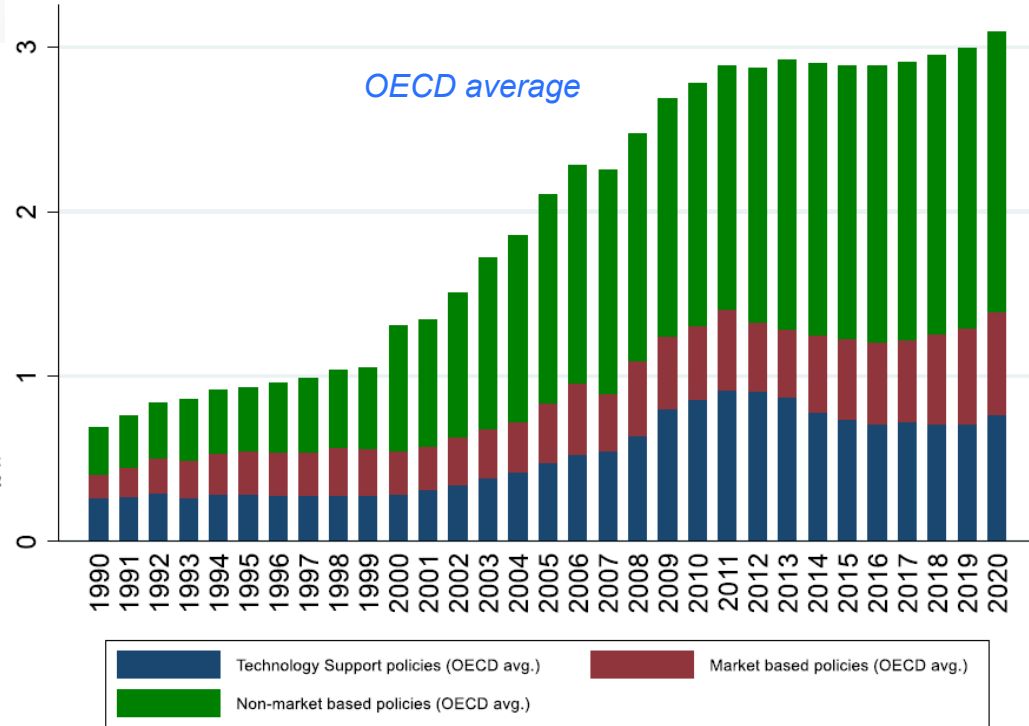
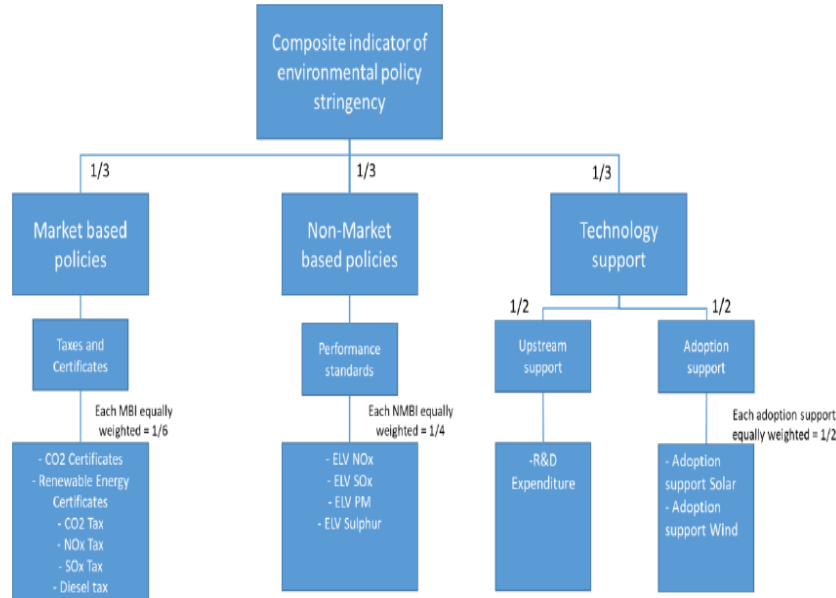


# Disclaimer

*The views expressed in this presentation are my own and do not necessarily reflect those of the European Central Bank or the Eurosystem*

# 1. Several types of climate policies: Non market-based, Technology support, Market-based

Environmental Policy Stringency by sub-indices



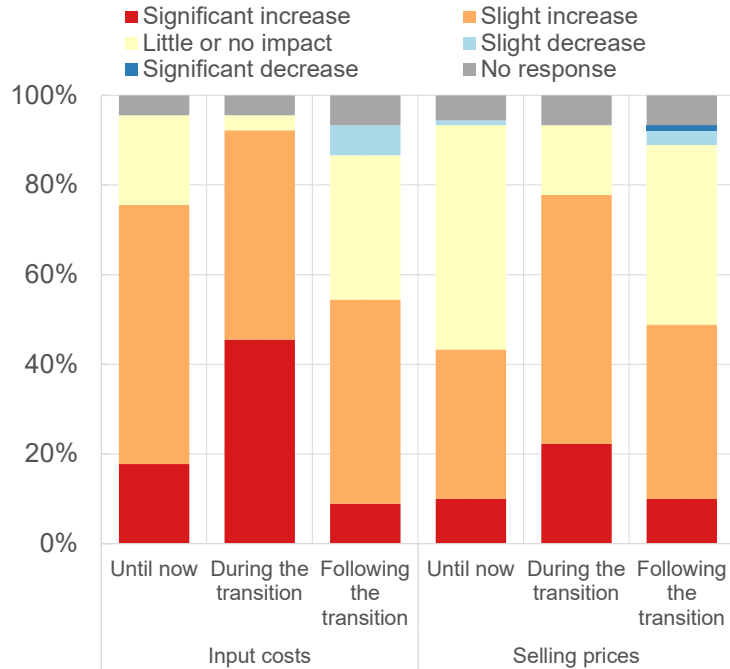
Note: The figure shows the aggregation structure of the revised EPS index (referred to as "EPS21").

Source: OECD (<https://doi.org/10.1787/90ab82e8-en>)

## 2. Firms expect substantial increases in costs and final prices

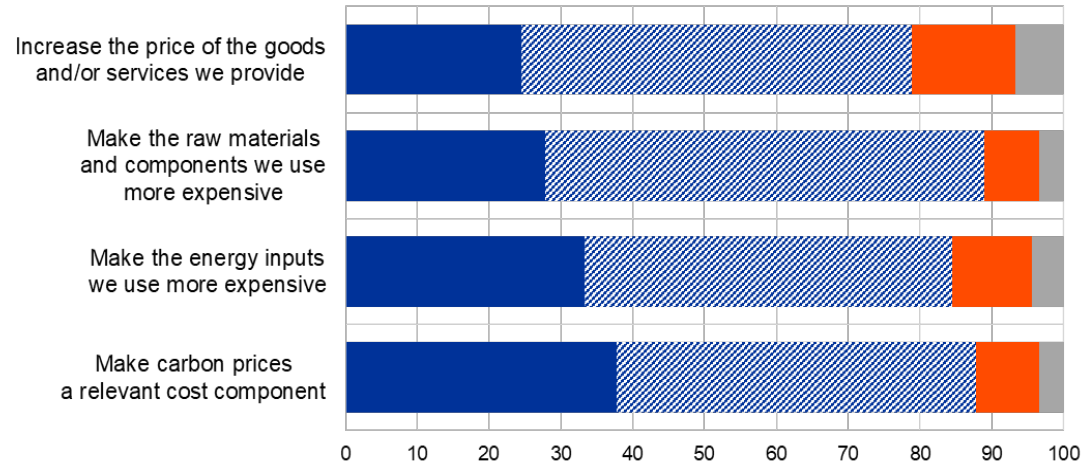
### Overall impact of climate change and climate policies on input costs and selling prices

(share of total responses)



### Selected impacts of transition policies on firms

(percent of total responses)



Source: ECB, published in "The impact of climate change on activity and prices – insights from a survey of leading firms", ECB Economic Bulletin Issue 4/2022.

Notes: Based on special survey in the context of the ECB's contacts with non-financial companies, with 90 respondents in total. The respondents consist of large and mostly multinational companies engaged in a wide range of non-financial business sector activities. Firms were asked to compare to a hypothetical baseline without climate change.

### 3. Standard models –that only focus on carbon tax– point to moderate inflation over short-medium term and mostly supply-type of effects, but demand may matter

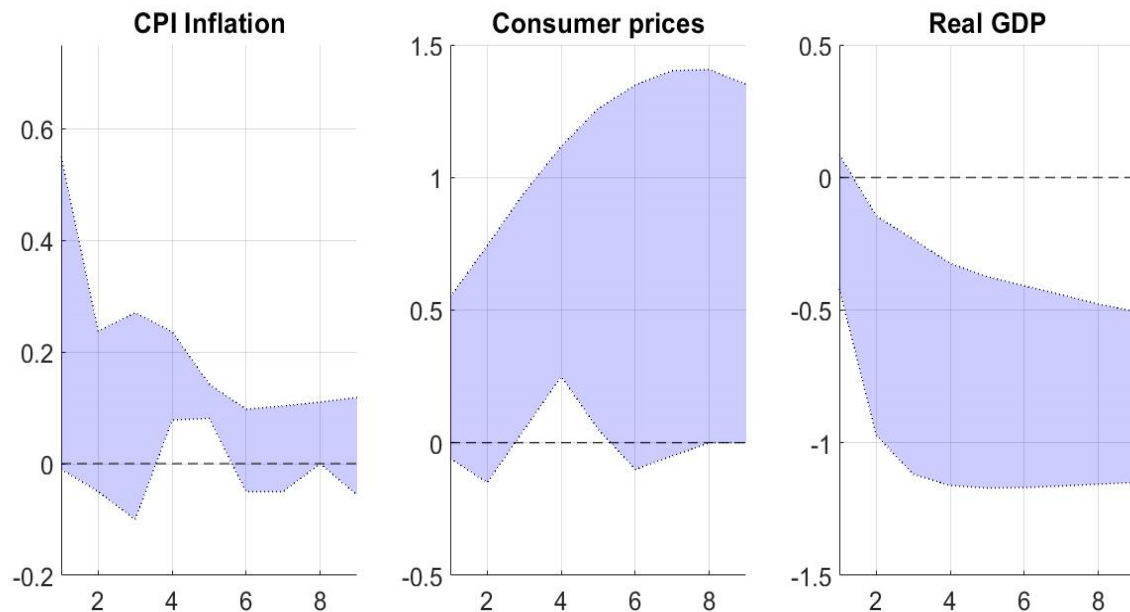
Paper	Model characteristics	Inflation		Output
		short-run (0-5 years)	medium-run (5-10 years)	
<a href="#">IMF GMMET</a>	Multi-country, multi-sector E-DSGE	+	+	-
<a href="#">GCUBED</a>	Multi-country, multi-sector hybrid DSGE-CGE	+	+	-
<a href="#">NiGEM</a>	Multi-country, multi-sector semi-structural	+	+	-
<a href="#">Oxford Economics Model</a>	Multi-country, multi-sector semi-structural	+	+	-
<a href="#">Coenen, Lozej, Priftis (2022)</a>	ECB NAWM with disaggregated energy	+	+	-
<a href="#">Priftis and Schoenle (2022)</a>	Closed economy NK E-DSGE with disaggregated energy and banks	+	+	-
<a href="#">Ferrari and Nispi Landi (2022a)</a>	Closed economy NK model with green and brown sectors	-	-	-
<a href="#">Ferrari and Nispi Landi (2022b)</a>	Closed economy NK model with abatement	+/-	-	-
<a href="#">Bartocci, Notarpietro, Pisani (2022)</a>	Open-economy NK E-DSGE with disaggregated energy	-	+	-
<a href="#">E-QUEST (EC DG ECFIN)</a>	Multi-sector E-DSGE with abatement and R&D			-

A carbon tax needed to reduce emissions by approx. 25% by 2030 is likely to have on average mild consequences for inflation



...uncertainty is large even across similar models run with the same protocol...

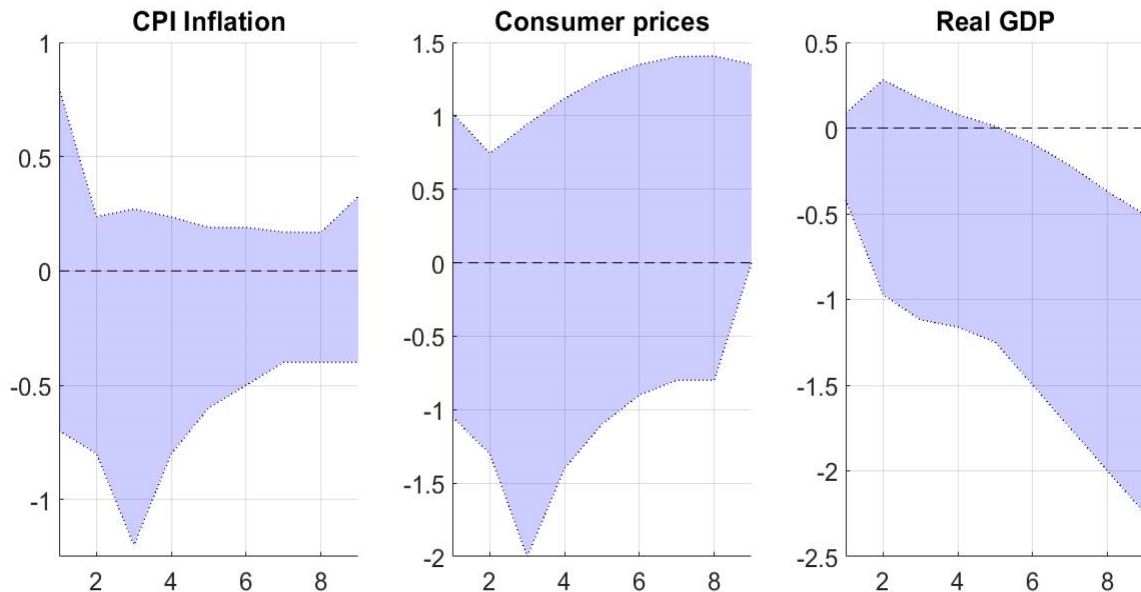
Uncertainty depends on different propagation channels



ECB models under development and run with same protocol: Common protocol: E-DSGE\_RR, NAWM-E, GCUBED, NIGEM, Oxford,

...and larger if we add other models and sensitivity analysis (although stories are all plausible)...

Uncertainty depends on different propagation channels and assumptions about **tax path, revenue redistribution, monetary policy response, expectations, counteracting negative demand effect, ...**

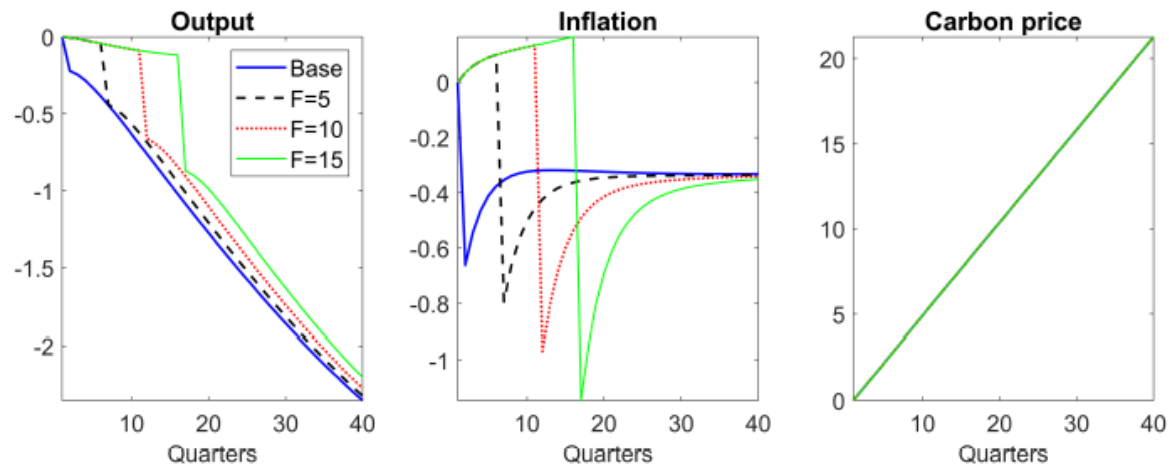


Adding other models (IMF, Bartocci et al. (2022), Ferrari and Nispi Landi (2022a, 2022b)), plus McKibbin, Konradt, Weder-Di Mauro (2021) and sensitivity analysis

For instance, expectations are important...

An increase in the tax today depresses current demand, putting downward pressure on prices. If the tax is non-credible, prices can increase because aggregate demand does not react

## The transition to a green economy

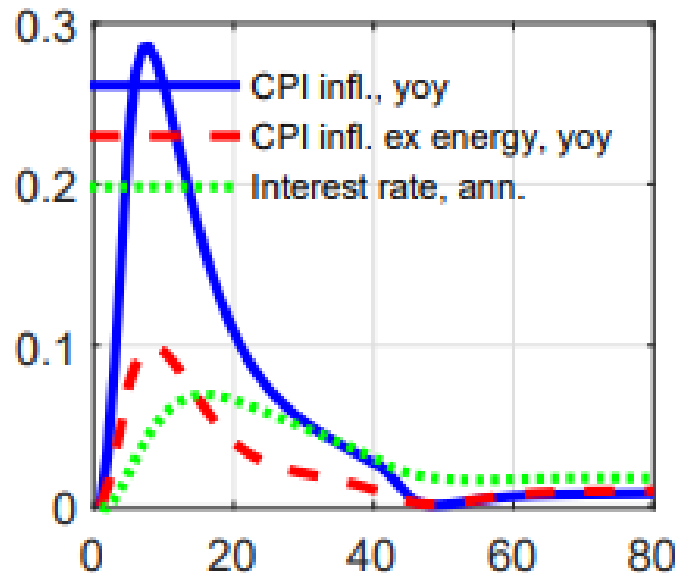


**Figure 2:** Transition to a zero-emission economy, driven by an emission tax. Output is in percentage deviations with respect to the value they would have had with no increase in the emission tax; inflation is in deviations compared to the target reported at annual rates; the price of carbon is in level deviations. The path for the emission tax is announced in period 0. Blue solid line: baseline scenario; black dashed line:  $F = 5$ ; red dotted line:  $F = 10$ ; green solid line:  $F = 15$ .

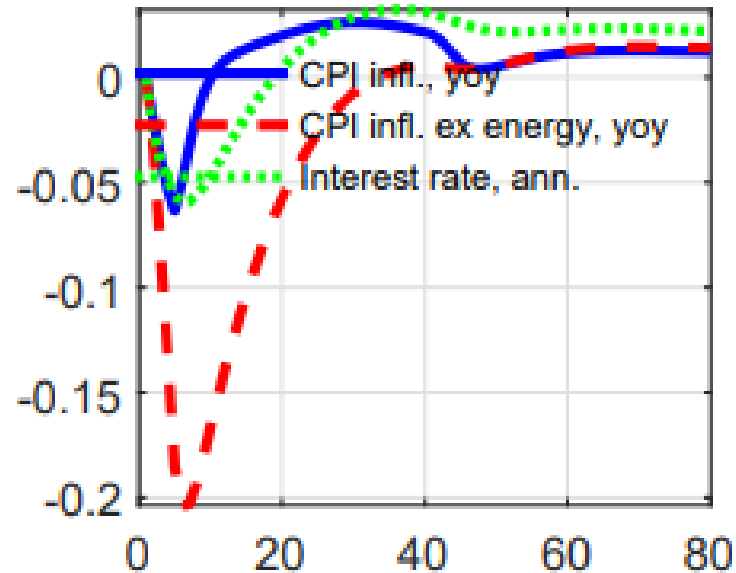
Source: Ferrari and Nispi-Landi (2022)

... and different monetary policy rules may have different implications for inflation

Policy rule targets core inflation



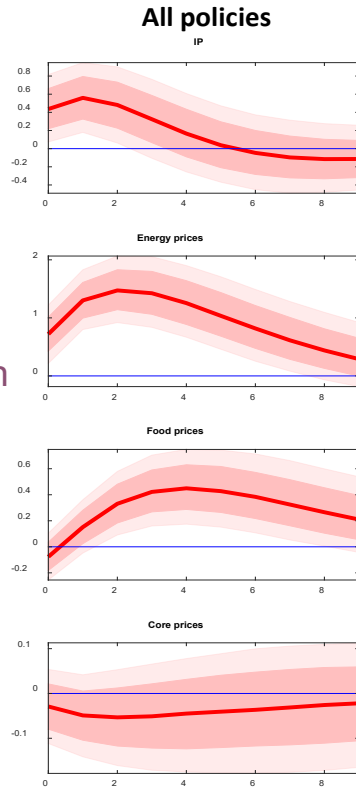
Policy rule targets headline inflation



Source: Coenen, Lozej, Priftis (2022)

## 4. Empirical analysis show that

climate policies affect prices

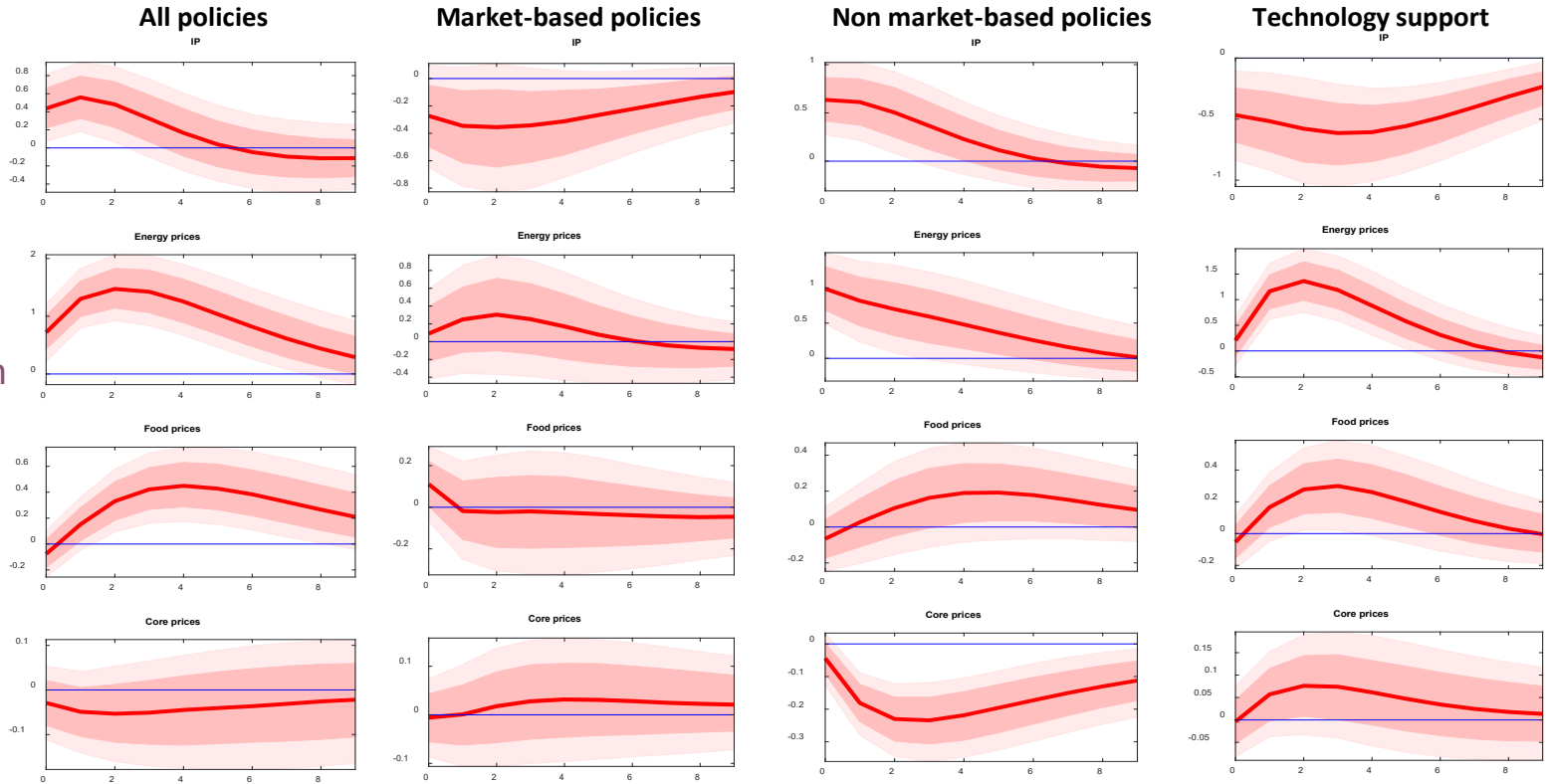


Climate policies have strong positive effects on energy and food and moderate or negative effects on core inflation

*They affect relative prices only*

Ciccarelli and Marotta (2021): Demand or Supply? An empirical exploration of the effects of climate change on the macroeconomy, ECB WP no. 2021/2608 and R&R at Energy Economics

## 4. Empirical analysis show that different climate policies affect prices differently



Climate policies have strong positive effects on energy and food and moderate or negative effects on core inflation

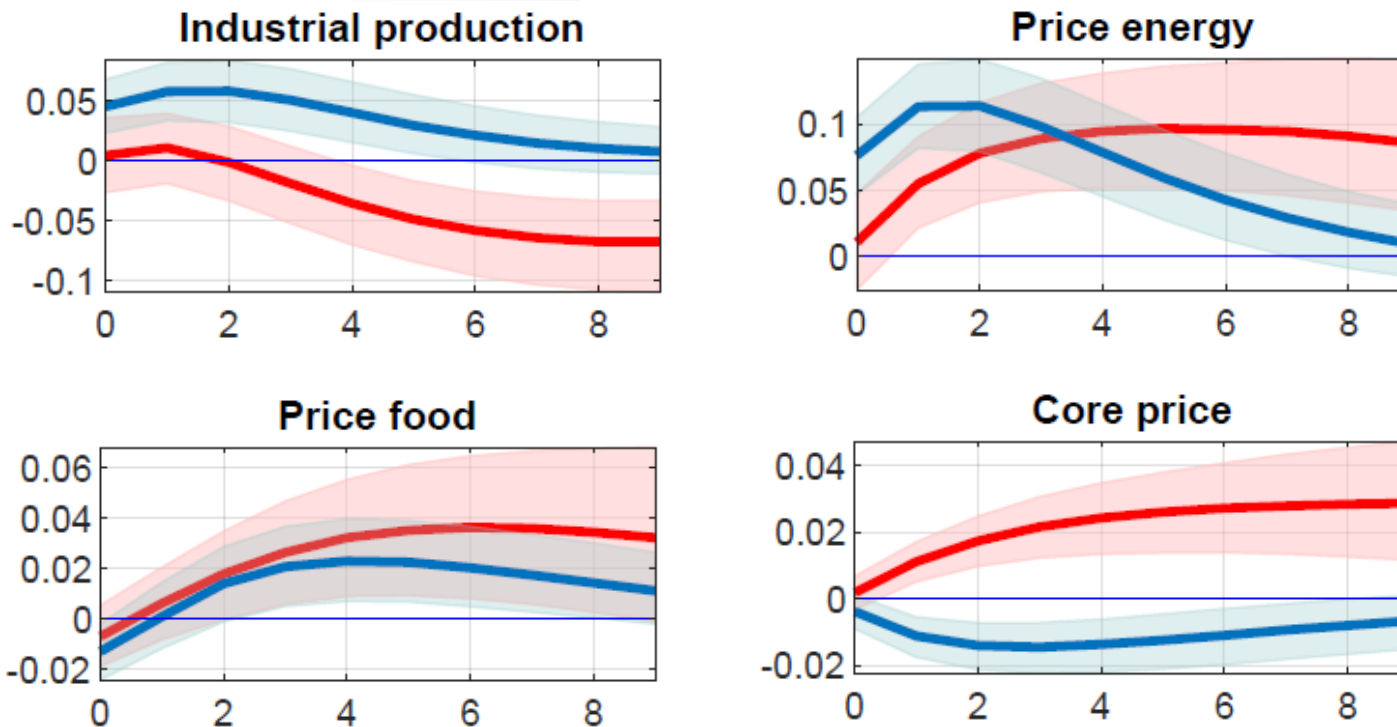
*They affect relative prices only*

Ciccarelli and Marotta (2021): Demand or Supply? An empirical exploration of the effects of climate change on the macroeconomy, ECB WP no. 2021/2608 and R&R at Energy Economics

## ...and country heterogeneity is an important feature

A shock to aggregate climate policy in two groups of countries

High vs Low  
initial GHG  
emissions

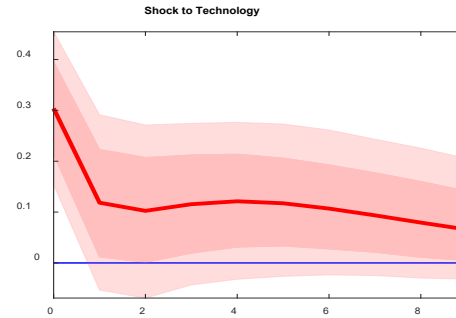
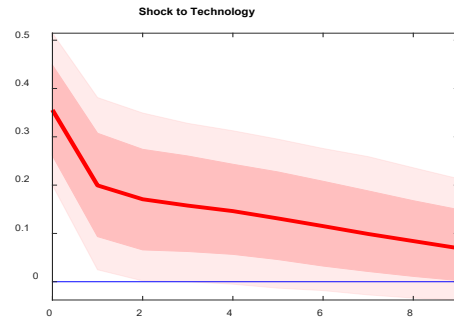
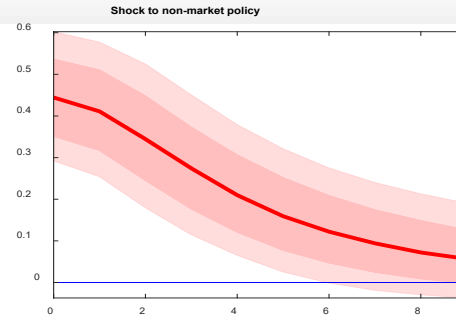
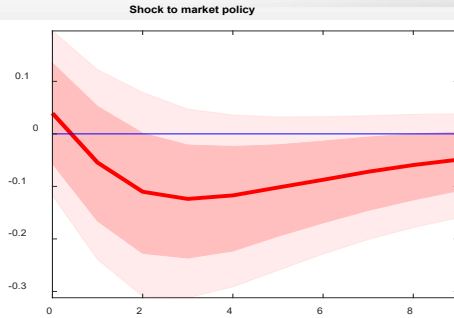


Ciccarelli and Marotta (2021): Demand or Supply? An empirical exploration of the effects of climate change on the macroeconomy, ECB WP no. 2021/2608 and R&R at Energy Economics

## 5. Inflation is important. Let's not ignore welfare, though

Technology is welfare improving. Some policies not necessarily

Response of welfare



Ciccarelli and Marotta (2021): Demand or Supply? An empirical exploration of the effects of climate change on the macroeconomy, ECB WP no. 2021/2608 and R&R at Energy Economics



## For discussion

- ❑ So far models give somewhat plausible but ambiguous responses
  - Different assumptions on relative importance of channels
  - Calibration based on history with little or no climate transition and very low carbon taxes
  - Need of more complete models (heterogeneity, welfare) and realistic design of scenarios
- ❑ Importance of empirically validated effects of combination of policies, including directed technological change (current focus is predominantly on carbon taxes)
- ❑ (A combination of) Climate policies do not necessarily hamper price stability.  
But an environment of price stability is important for the green transition
- ❑ **Waiting for new macro and national account indicators? We compute effects on variables whose measures are bound to change to incorporate new concepts (e.g., resilience, biodiversity, degradation)**



Thank you for  
your attention!

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**Research Perspective on Supply Chain Disruptions and  
International Forces:  
Implications for Inflation and Policy Coordination**

Şebnem Kalemli-Özcan  
University of Maryland, CEPR, NBER

**NYFED, November 18, 2022**

# Lessons of 2020–2021

1. What did central banks miss? ⇒ Tight labor markets

# Lessons of 2020–2021

1. **What did central banks miss?**  $\Rightarrow$  Tight labor markets
  - Standard measures show slack (unemployment rate, total jobs)—pandemic made these redundant (sectoral supply and demand shocks)
  - Measurement is key: How to measure slack under supply shocks? Without, we cannot know how high rates need to go

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2. **Transitory-permanent inflation debate lacks the global perspective**
  - Compositional shifts in consumption  $\Rightarrow$  global supply chain disruptions
  - Few sectors price increase (chips, used cars) with 2020 deflation gave the transitory impression, while repeated supply shocks happening and travelling via global supply chains (China lockdowns, Russia)

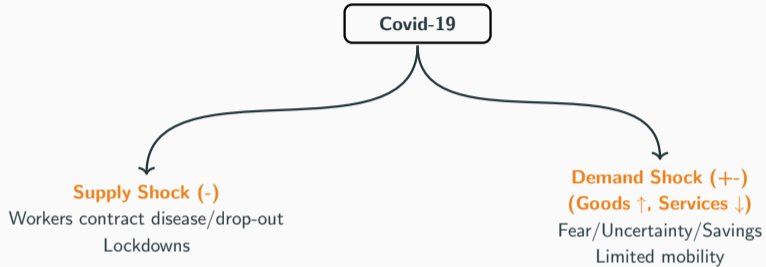
# Lessons of 2020–2021

1. **What did central banks miss?** ⇒ Tight labor markets
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2. **Transitory-permanent inflation debate lacks the global perspective**
  - Compositional shifts in consumption ⇒ global supply chain disruptions
  - Few sectors price increase (chips, used cars) with 2020 deflation gave the transitory impression, while repeated supply shocks happening and travelling via global supply chains (China lockdowns, Russia)
3. **Early predictors of inflation based on higher demand not correct.** If it was all demand output should be higher than potential output in 2021. It was not.

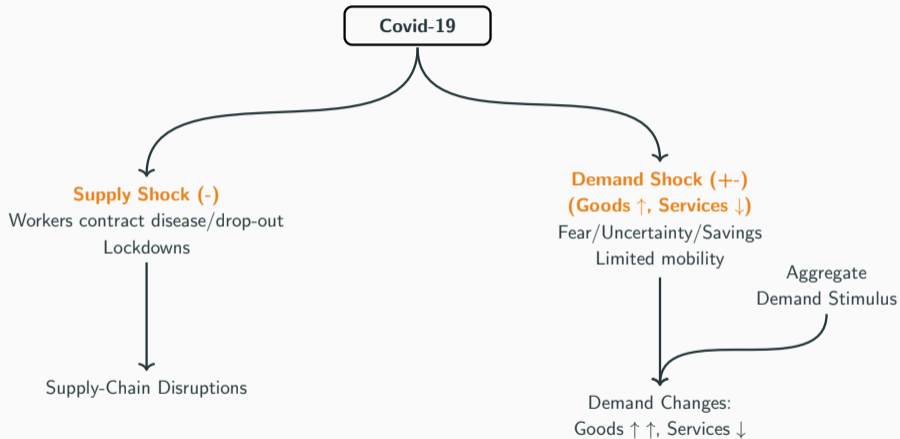
**CBs waited during which aggregate demand stimulus amplified the supply constraints**



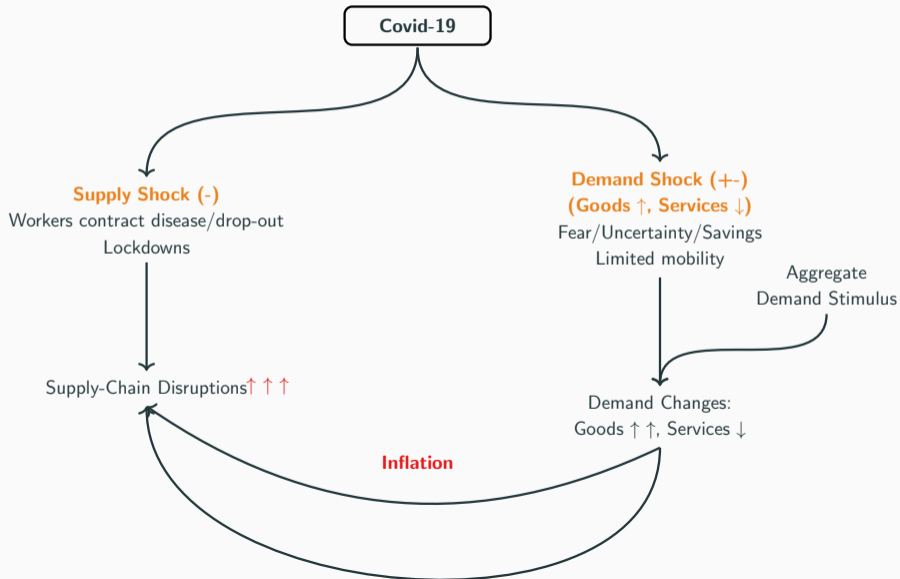
# Supply-Demand Imbalances ↑ on a Global Scale During 2020–2021



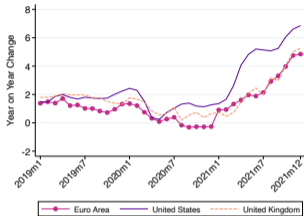
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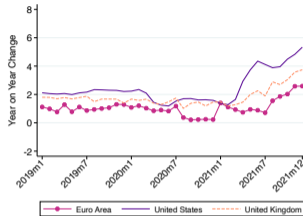
# Supply-Demand Imbalances ↑ on a Global Scale During 2020–2021



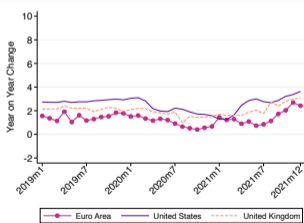
# Compositional Shifts in Consumption $\Rightarrow$ Sectoral Differences in Inflation



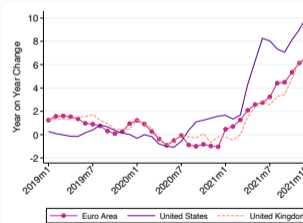
(a) Headline



(b) Core



(c) Services

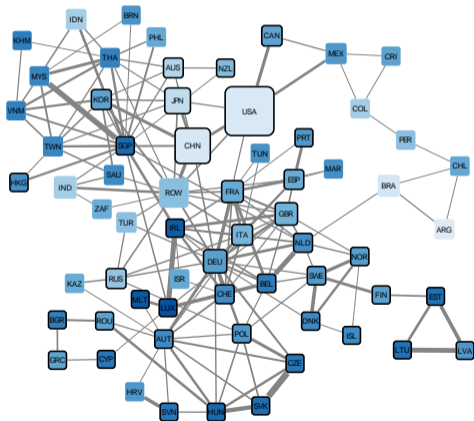


(d) Goods

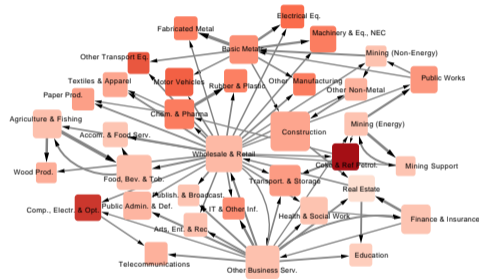
Notes: Figures plot headline, core, and services and goods annual inflation. Data sourced from the FRED system.

# Global Trade and Production Network: OECD ICIO Tables

(a) Countries



(b) Industries

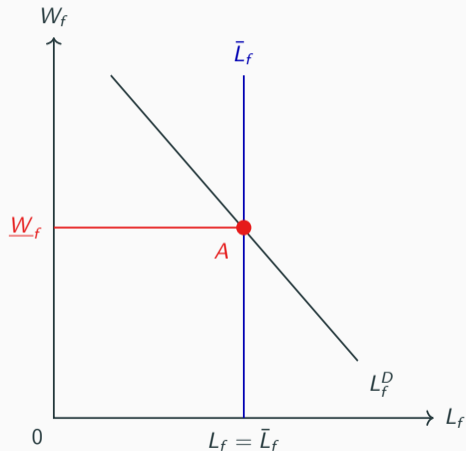


35 industries in 65 countries, giving us a matrix of  $2275 \times 2275$  entries

# From Segmented Labor Markets to Aggregate Inflation: Macro-Network Model

1. Sectoral demand and supply shock  $\implies$  Sectoral consumption and sectoral hours worked
2. Aggregate demand shock—stimulative policies

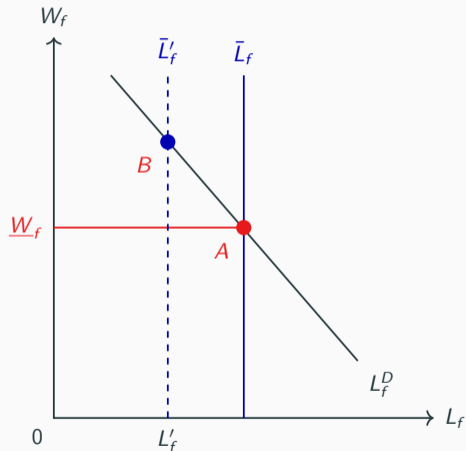
Inflation  $\approx$  Aggregate Demand – Network weighted  $\Delta L_f$



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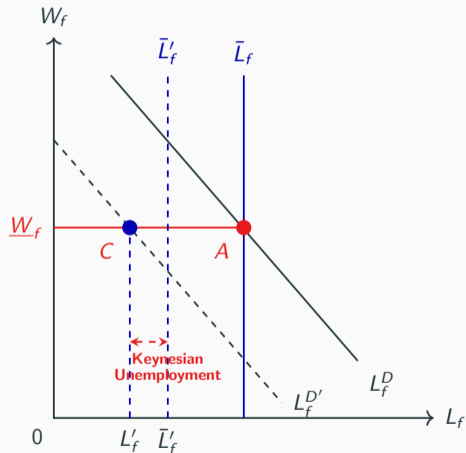
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# From Segmented Labor Markets to Aggregate Inflation: Macro-Network Model

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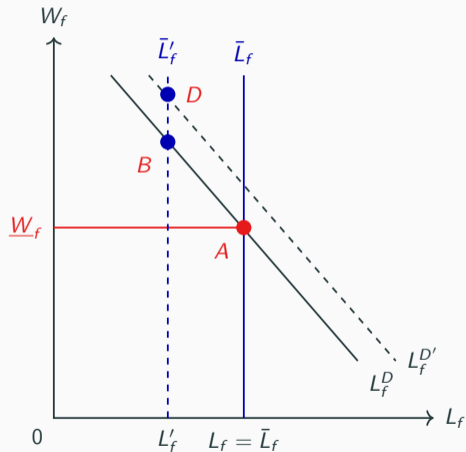




# From Segmented Labor Markets to Aggregate Inflation: Macro-Network Model

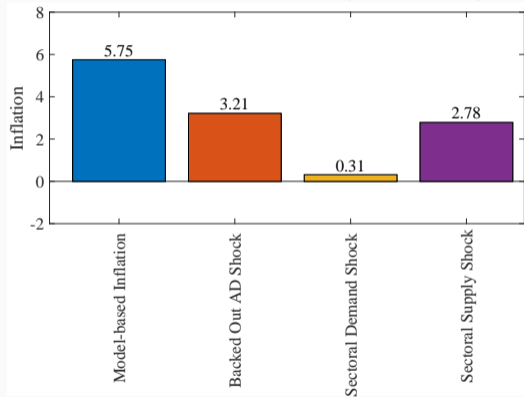
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Inflation  $\approx$  Aggregate Demand – Network weighted  $\Delta L_f$

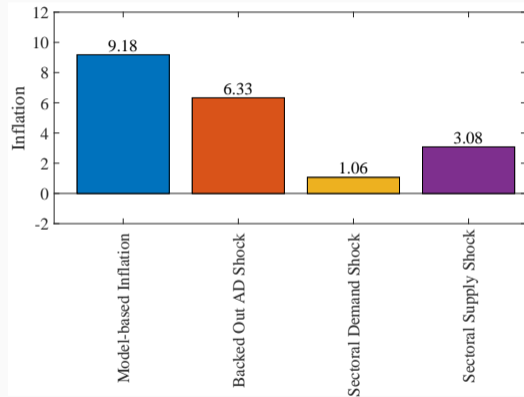


# EA—Observed headline inflation: 4.69: US—Observed headline inflation: 8.47

Sectoral supply shocks explain 1/2 of EA, 1/3 of US observed inflation



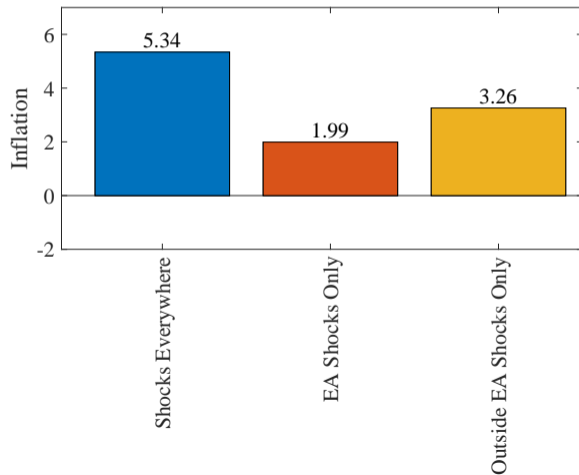
(a) Euro Area: 45 Sectors



(b) U.S. 66 Sectors

# Effects of Global Bottlenecks on Euro Area Inflation

Foreign shocks explain 2/3 of observed EA inflation



# Takeaways

- Global health shock + limited substitutability across inputs  $\Rightarrow$  supply chain bottlenecks  $\Rightarrow$  rise in prices

# Takeaways

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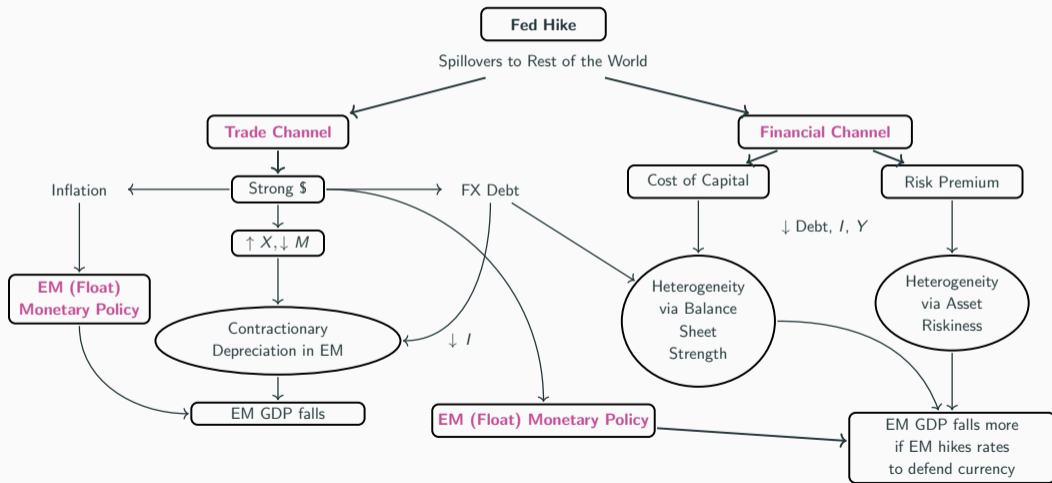
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- Given the extent of globalization, under supply shocks, **no economy fully recovers until every economy recovers**  $\Rightarrow$  **international coordination on health+fiscal policies**



# Global inflation + strong dollar $\Rightarrow$ monetary policy coordination? Not necessarily



# Will the Strong Dollar Trigger a Global Recession?

Presentation at Federal Reserve Bank of New York,  
Global Research Forum on International Macroeconomics and  
Finance



Steven B. Kamin

American Enterprise Institute  
November 2022

## Financial media obsessed with strong dollar

“How the surging U.S. dollar is making it almost impossible to afford anything in countries around the world.”

(Fortune, October 18)

“Fallout From Rate Moves Won’t Stop the Fed.”

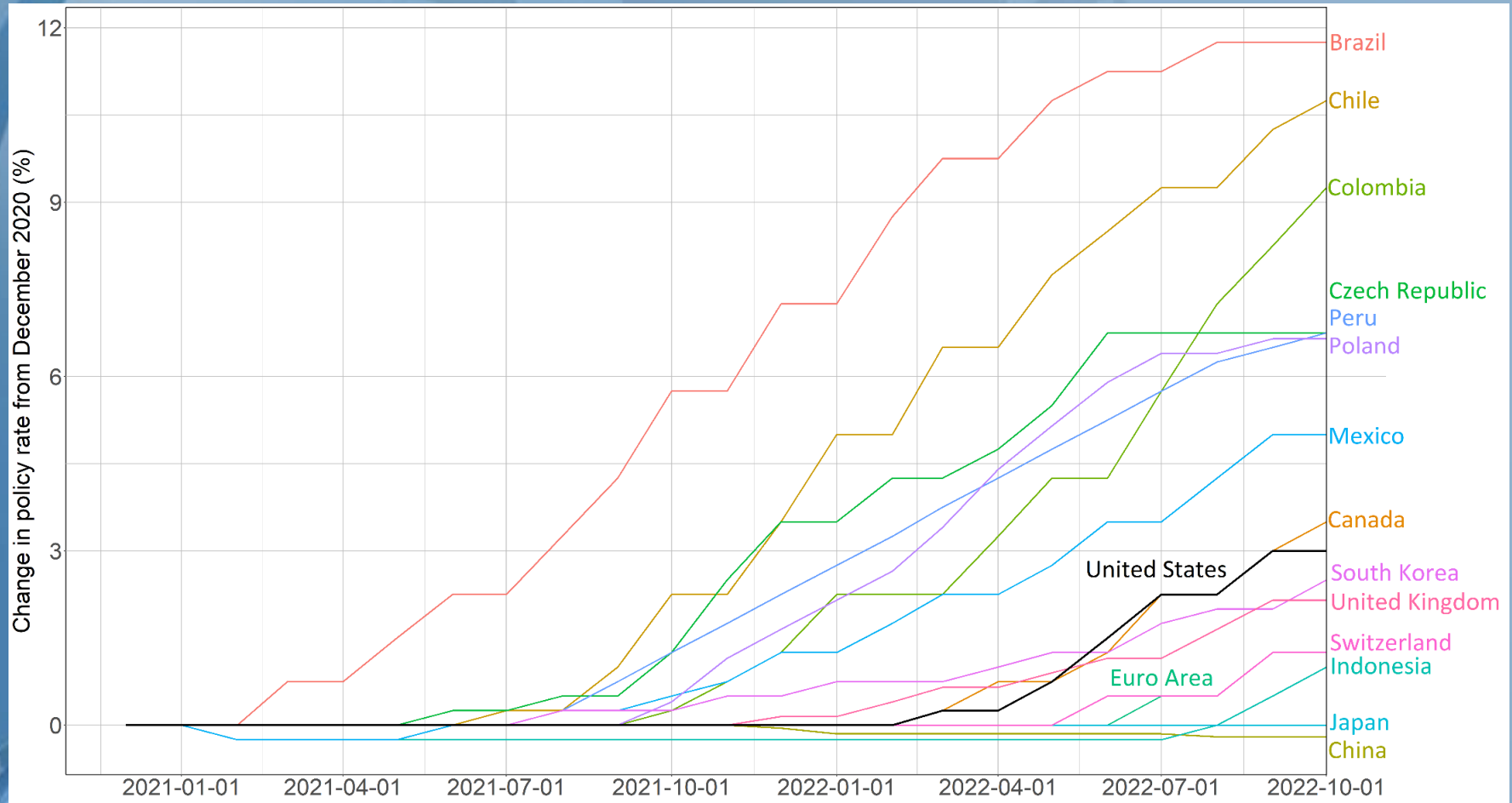
(NY Times, October 7)

“The Fed has the world in its hands — and its aggressive moves are creating global economic chaos that could come back and hurt the US.”

(Business Insider, October 1)

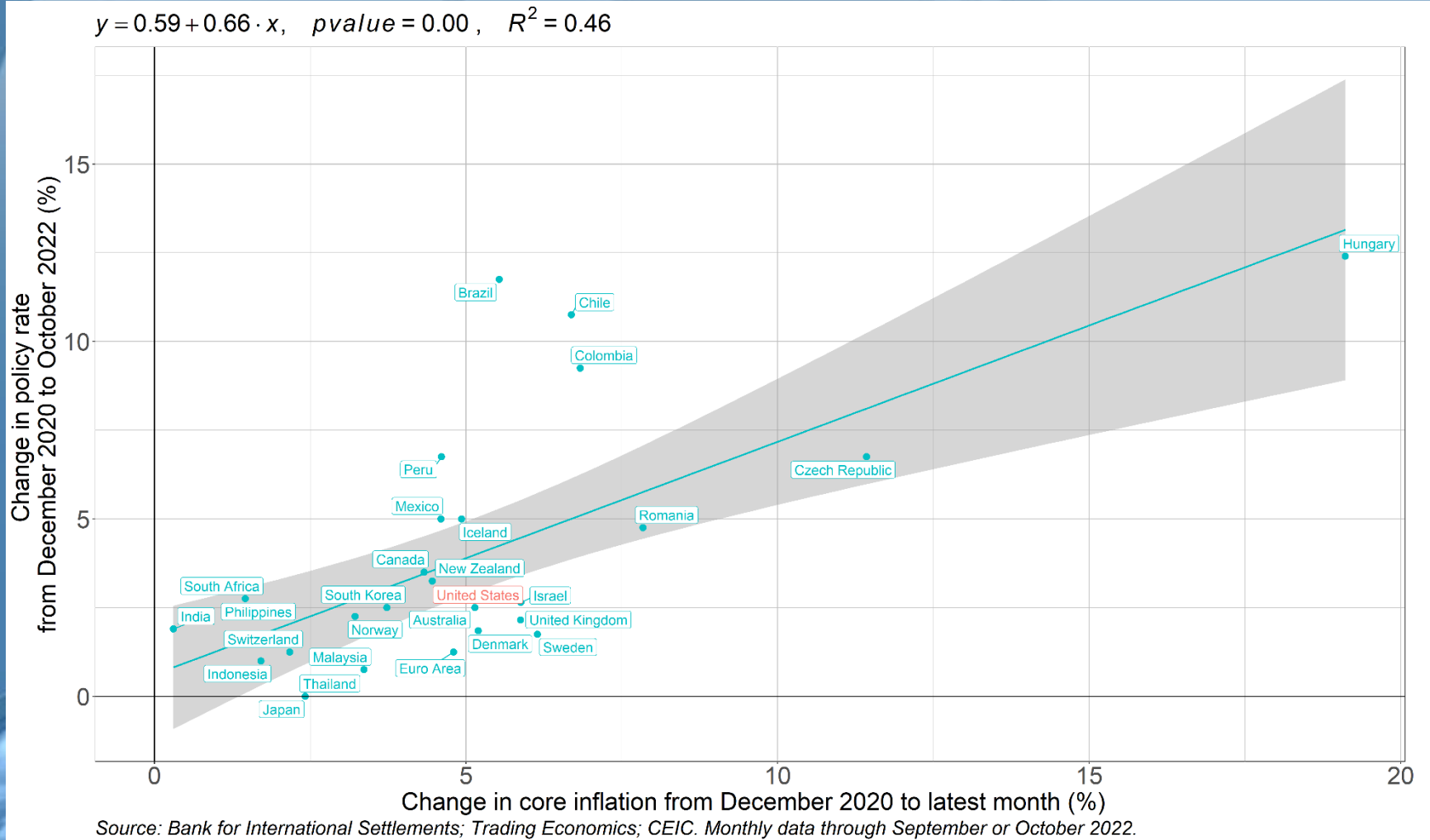


# Fed Tightening Cycle Lagged Many Central Banks

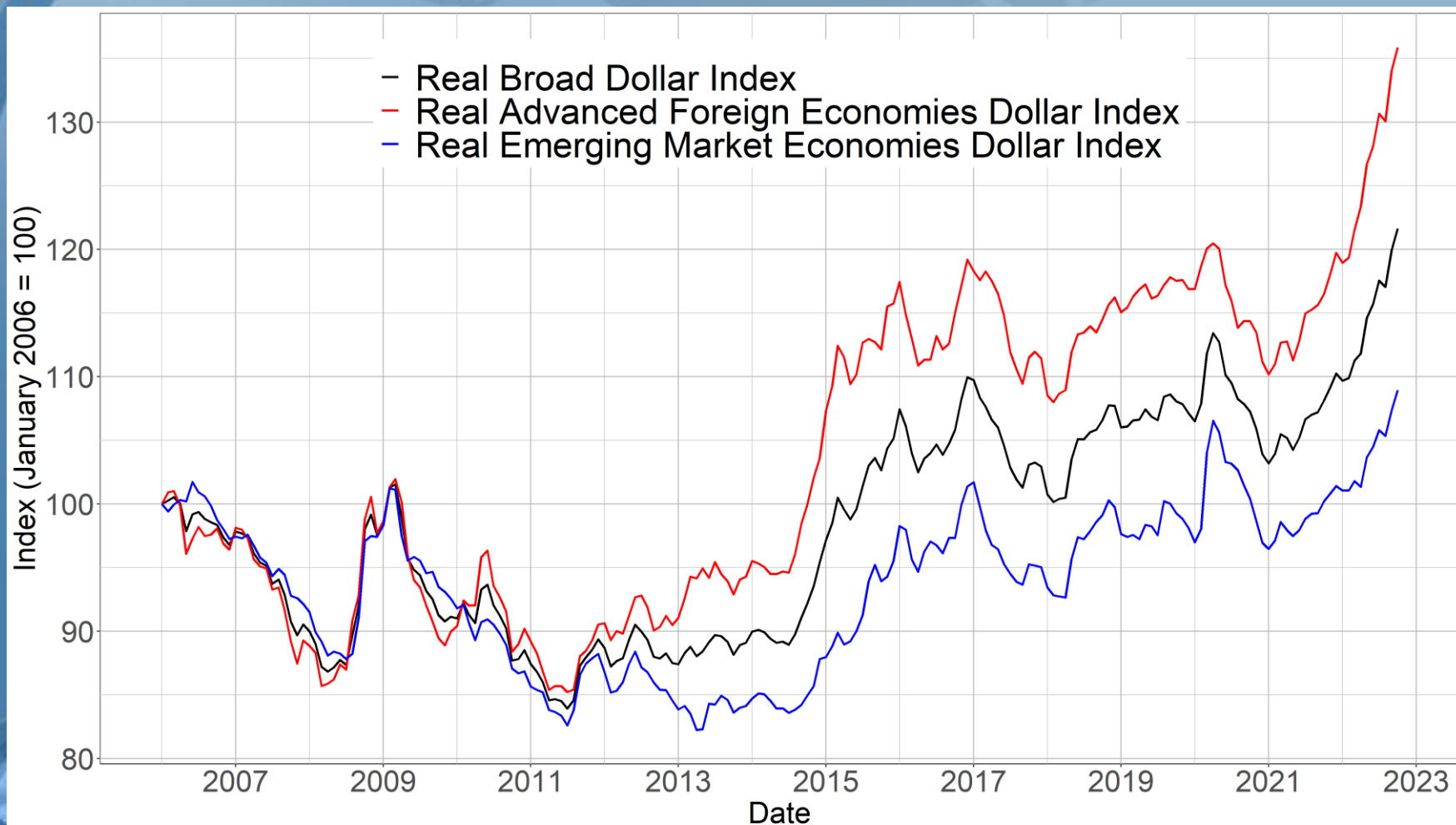


Source: Bank for International Settlements; Trading Economics. Month-end policy rate data through October 2022.

# Fed Response To Soaring Inflation In Line With International Norms

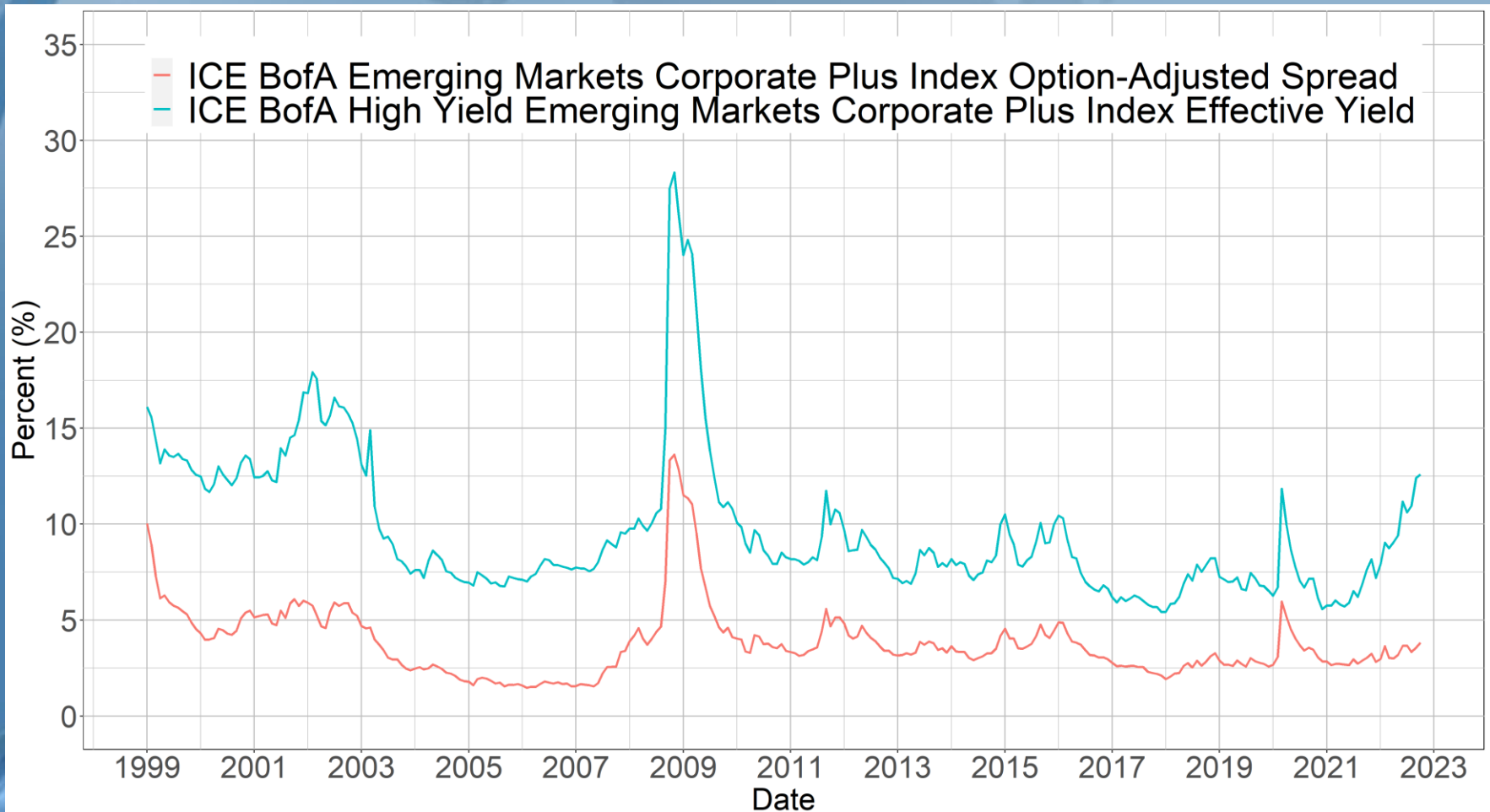


# The Dollar Has Risen Far More Against Advanced Economies Than Against EMEs



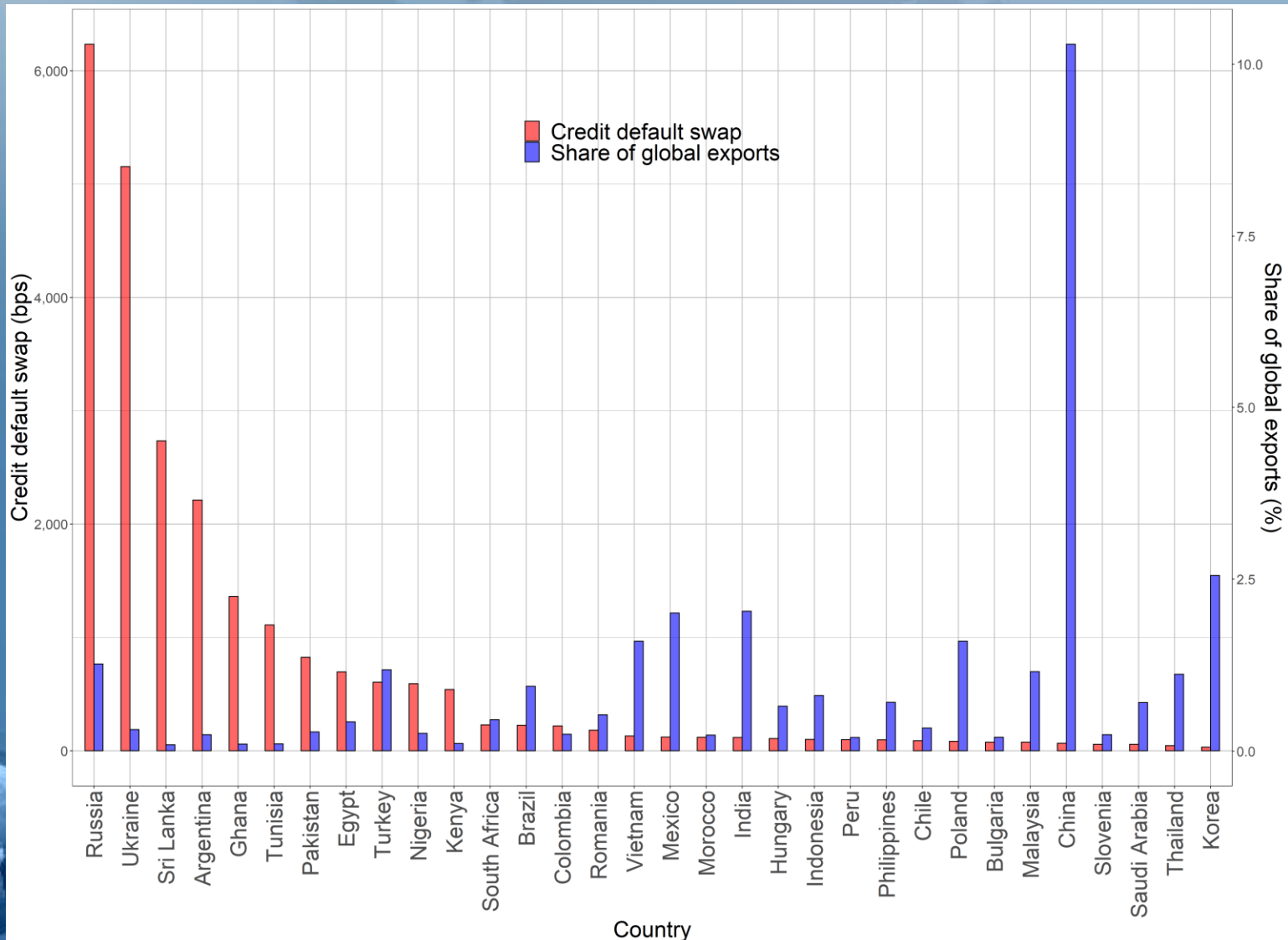
Source: Board of Governors of the Federal Reserve System (US). Monthly data through October 2022.

# EME Spreads Remain Contained, Though High-Yields Spreads Are Widening



Source: Ice Data Indices, LLC, accessed through the Board of Governors of the Federal Reserve System (US).  
Month-end data through October 2022.

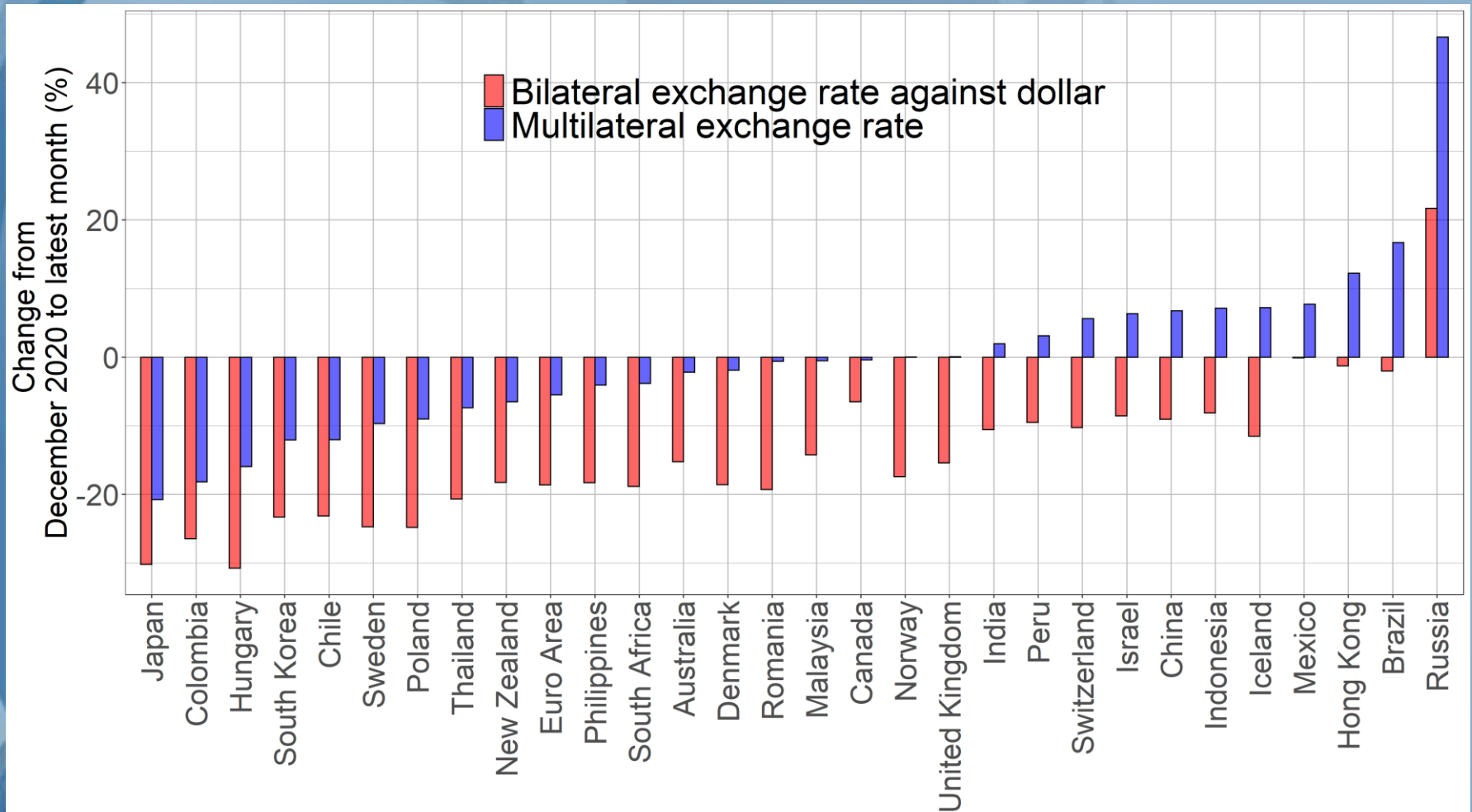
# EMEs With High CDS Spreads Are Not Those With Big Global Export Shares



Source: Council on Foreign Relations; International Monetary Fund. Share of global exports refers to share of global goods exports.

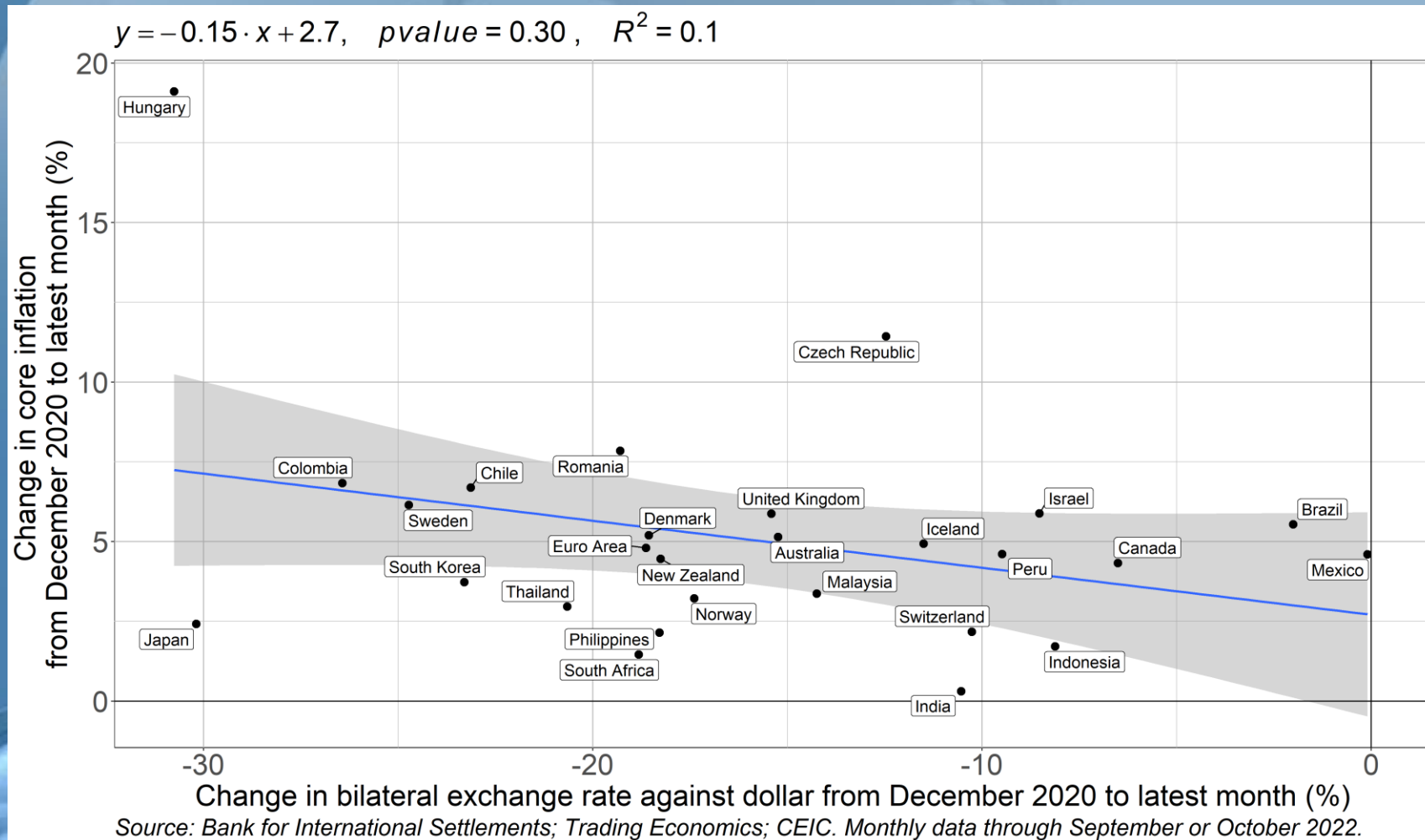


# The Decline Of Currencies Against The Dollar Exaggerates Their Multilateral Decline



Source: Bank for Internal Settlements; CEIC. Monthly rates through October 2022.

# Relationship Between Depreciation Against Dollar And Increases In Core Inflation Has Been Weak



# Thanks!

