Good News Travels Fast: Global Demand Shocks, Oil Futures, and Emerging Markets Dynamics*

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22nd ESCB Emerging Markets Workshop
November 27, 2025

*The views expressed are those of the authors and do not necessarily represent the views of the Central Bank of Chile, the International Monetary Fund, or their board members and management. Any errors and typos are our own.

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Motivation: Why Study Global Demand and Oil?

- Global demand shocks affect growth, inflation, commodity markets, and financial stability, especially in Emerging Markets (EMEs).
- Yet challenging identification: global demand reflects policy factors, expectations, financial conditions and endogenous macro dynamics.
- A strand of research attempts to disentangle the sources of macro fluctuations using oil markets as a vehicle (e.g. Kilian (2009)).
  - Oil markets are globally integrated and respond quickly to economic developments.
  - Multiple daily expectations signals are captured in this deep and highly liquid market.
  - In other words, oil markets make a timely real-time barometer of the global economy.
- Less attention has been devoted to global demand shocks using external instruments.

A Proposed Instrument for Global Demand Shocks

- We propose a novel high-frequency instrument to identify global demand shocks.
- The instrument:
  - Uses the oil market as the best-suited (but not unique) transmission channel for global demand shocks.
  - It isolates exogenous variation by observing future oil price changes around labor market releases in the US and Euro Area.
  - Is used in a Proxy SVAR framework to identify global demand shocks through oil price changes.
- The shock is best thought of as a news shock about future global demand.

Why It Works and What We Find

- Labor market surprises shift beliefs about global demand and the macroeconomic outlook; oil futures react within the same day of the data release.

- Global demand shocks leads to:
  - ↑ an immediate increase in oil prices and other commodities.
  - ↑ an increase in real activity.
  - ↑ an improvement in international financial conditions.
  - ↓ oil inventories decline.

- This has consequences for the emerging market economies:
  - IP increase, sovereign spread compress, real exchange rates appreciate, and local prices increase.
  - Depending on the oil exposure, we observe heterogeneous responses to these shocks.

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Literature Context

- Kilian (2009), Baumeister & Hamilton (2019): demand and supply decomposition of oil shocks through short- and long-term restrictions.
- Stock & Watson (2012), Mertens & Ravn (2013): external instruments in SVARs.
- Kanzig (2021): uses oil futures to identify supply shocks around OPEC events.
- Our contribution: first to use high-frequency labor market surprises to proxy *global demand* shocks.

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Proxy - SVAR

- Following the methodology proposed by Stock & Watson (2012), and Gertler & Karadi (2015); an SVAR with external instruments is used

$$PX_t = Q_1 X_{t-1} + \cdots + Q_p X_{t-p} + \varepsilon_t, \quad \varepsilon_t \sim iid(0, \Sigma)$$

- Our instrument must satisfy both a relevance and an exogeneity condition:

$$\mathbb{E}[z_t \epsilon_{1t}] \neq 0, \quad \mathbb{E}[z_t \epsilon_{jt}] = 0 \quad \text{for } j \neq 1$$

- Two-step procedure and identification through the first column of errors:

$$Y_t = \begin{bmatrix} \phi_{1,1} & \dots \\ \vdots & \vdots \\ \phi_{p,1} & \dots \end{bmatrix} Y_{t-1} + \begin{bmatrix} b_{1,1} & \dots \\ \vdots & \vdots \\ b_{p,1} & \dots \end{bmatrix} \begin{bmatrix} \epsilon_{1t} \\ \vdots \\ \epsilon_{pt} \end{bmatrix}$$

- **First step**: OLS estimation between residuals and instrument.
  Second step: the vector of slope coefficients identifies covariance matrix.

Model specification and Data

1. X_t includes:
   - Baseline: real oil price, world oil inventories, world IP, VIX, and WFCI.
   - EMEs aggregates: IP, CPI, REER, and EMBI country spread.
2. Lag structure: based on information criteria, a VAR (2) is used on a monthly basis.
3. All variables, except VIX and WFCI are estimated in used in log-levels. Seasonally-adjusted as needed.
4. Estimation sample: 2000M1-2019M12.
5. PPP coverage: The EMEs sample covers about 88 percent of the total EMEs GDP, and about 51 percent of global GDP. ▸ List of countries

Instrument Foundations: Relevance in the Market

- Labor market releases in the US and in the EA are among the most relevant information drivers for agents in the region.

Table 1: The Importance of Labor Data in Market-Relevant Economic Indicators

Event	Bloomberg Ticker	Relevance Value
(a) United States		
Change in Nonfarm Payrolls	**NFP TCH Index**	**99.3**
Initial Jobless Claims	INJCJC Index	98.6
FOMC Rate Decision	FDTR Index	98.0
CPI MoM	CPI CHNG Index	97.3
GDP Annualized QoQ	GDP CQOQ Index	96.6
ISM Manufacturing	NAPMPMI Index	95.2
Retail Sales Advance MoM	RSTAMOM Index	93.9
Conference Board Consumer Confidence	CONCCONF Index	91.8
Unemployment Rate	USURTOT Index	89.4
New Home Sales	NHSLTOT Index	88.4
(b) Euro Area		
ECB MRO Announcement Rate	EURR002W Index	97.6
EA Real GDP QoQ	EUGNEMUQ Index	90.5
HCOB EA Manufacturing PMI SA	MPMIEZMA Index	90.0
EA MUICP All Items MoM NSA	ECCPEMUM Index	85.7
Eurostat IP EA Industry Ex Construction MoM SA	EUITEMUM Index	79.2
HCOB EA Composite PMI Output SA	MPMIEZCA Index	73.8
Eurostat Unemployment EA SA	**UMRTEMU Index**	**69.0**
European Commission Consumer Confidence EA	EUCCEMU Index	66.7
ZEW EA Expectation of Economic Growth	GRZEEUEX Index	61.9
Eurostat Retail Sales Volume EA MoM SA	RSSAEMUM Index	54.8

Note: Bloomberg's Relevance Value is the share of user alerts for this event relative to all events in the same country. Values for selected United States in (Panel (a)) and Euro Area (Panel (b)) indicators retrieved on August 20, 2025.

Instrument Foundations: Beliefs and Macro Information

- New information is digested by agents around labor market releases.
- What **matters** for our identification:
  - How market participants interpret the news in relation to future global economic activity (good news or bad news).
- Why?
  - Good news on the labor market data are typically interpreted as signaling higher expected global growth and energy consumption, regardless of the underlying source of the labor market shock.
- How to capture that information?
  - Oil futures are forward-looking, deep, liquid, and trade continuously worldwide (over 1 million contracts every day).
  - Best candidate to capture updated beliefs about expected growth and energy use.
  - Announcement-window price moves then reflect revisions to beliefs about global demand.

The Instrument Construction

Identification is based on movements in oil futures around labor market releases in US and Euro Area

For month t, we define d as the specific day of the announcement, O as the closing price of the 3-month oil futures contract on that day.

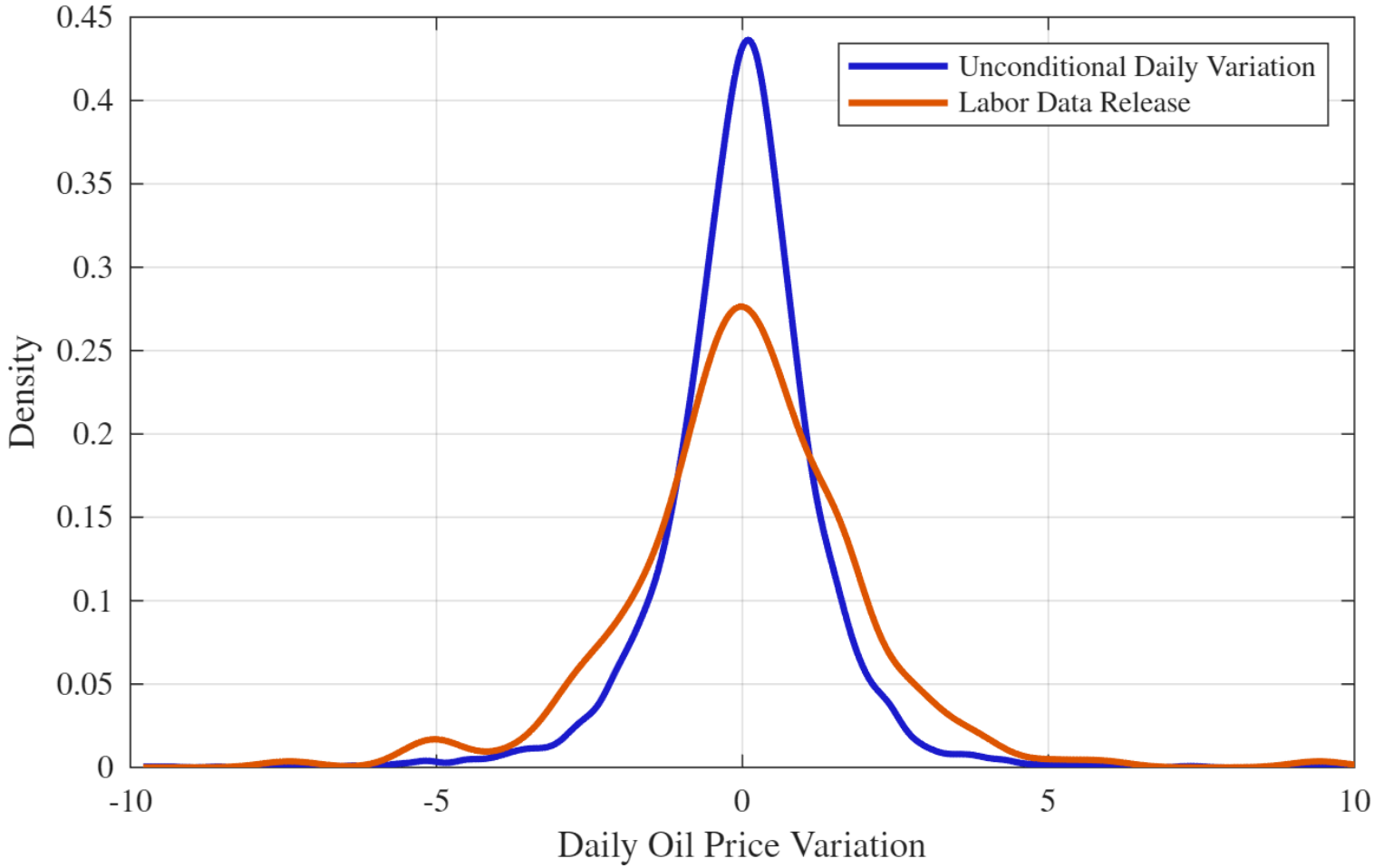
$$W_t = O_{t,d} - O_{t,d-1}$$

Key assumption

No other structural shocks systematically affect oil price expectations within the immediate post-release window.

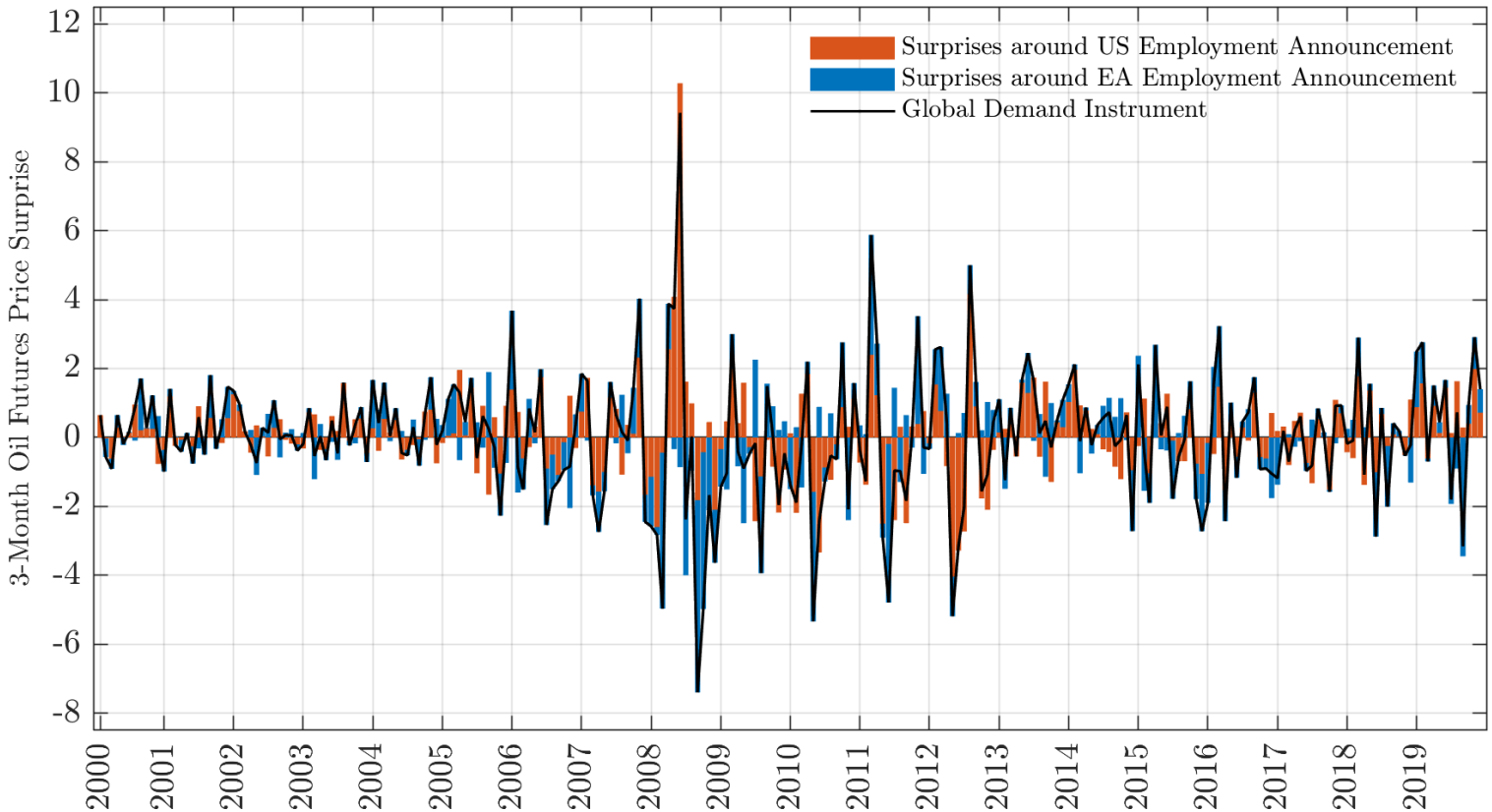
$\Rightarrow$ W_t surprises would offer timely and credible signals of global economic activity, reflecting the central role of US and EA in global output, trade, and financial markets.

Labor Announcements: A Normal Day for Oil?



- Labor market releases generate larger oil price movements than typical daily changes.

Global Demand Instrument



- Large deviations from expectations lead to pronounced movements in oil futures, consistent with demand-driven revisions.

Instrument Relevance

Table 2: First stage F-statistic

Instrument	**Global**			**EMEs**			**Exporter**			**Importer**		
	L=1	L=2	L=3	L=1	L=2	L=3	L=1	L=2	L=3	L=1	L=2	L=3
US Employment Announcement												
Chng. in 1-month WTI future	25.30	22.57	18.32	28.48	25.03	20.98	20.44	16.13	15.24	28.70	22.69	18.91
Chng. in 2-month WTI future	25.45	22.09	18.49	27.98	23.61	19.82	19.79	14.56	14.07	27.25	21.30	18.10
Chng. in 3-month WTI future	25.25	21.79	18.43	27.51	22.78	19.24	19.65	14.09	13.70	26.60	20.64	17.48
EA Employment Announcement												
Chng. in 1-month WTI future	10.89	4.25	5.15	11.07	6.68	6.79	10.17	2.78	3.13	5.12	4.34	4.59
Chng. in 2-month WTI future	10.17	4.15	4.86	10.66	6.74	7.04	9.37	2.76	3.16	5.10	4.39	4.63
Chng. in 3-month WTI future	10.08	4.28	5.00	10.61	6.99	7.38	9.20	2.95	3.32	5.17	4.63	4.87
US and EA Employment Announcement												
Chng. in 1-month WTI future	35.67	23.42	21.61	38.77	29.31	26.18	30.91	16.26	16.24	29.89	23.88	21.44
Chng. in 2-month WTI future	34.27	22.46	20.95	37.14	27.77	25.16	28.70	14.76	15.09	28.12	22.44	20.45
Chng. in 3-month WTI future	33.81	22.34	21.00	36.49	27.35	25.03	28.23	14.64	14.98	27.61	22.22	20.23

Note: The Global and EMEs specification uses data from February 2000 to December 2019, while the Exporter and Importer models are estimated from January 2006 to December 2019 due to limited data availability. The Global model includes real oil prices, world industrial production, VIX, world oil inventories and world financial conditions. Instead of world oil inventories, the EMEs model includes emerging markets aggregates (industrial production, CPI, EMBI Global, and REER). Exporter and Importer models disaggregate EMEs variables by net oil trade position. Results are shown for VAR models with 1 lag (L=1), 2 lags (L=2) and 3 lags (L=3).

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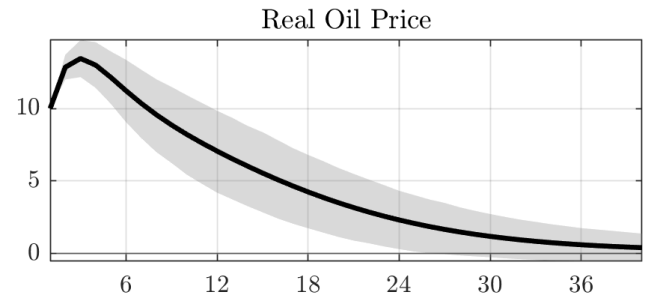
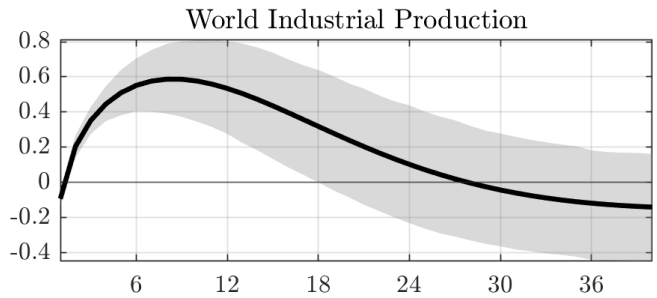
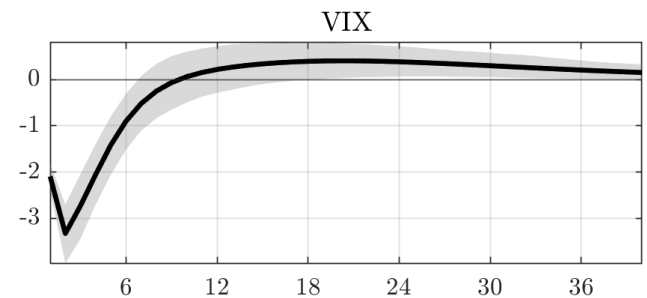
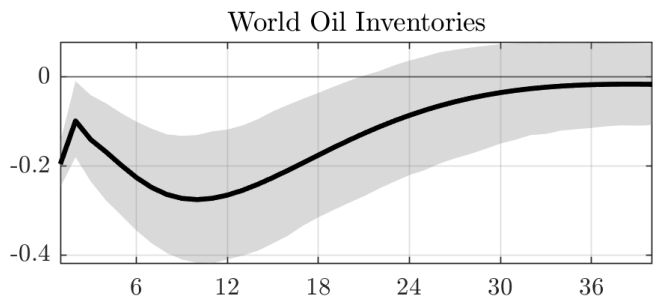
Baseline Results

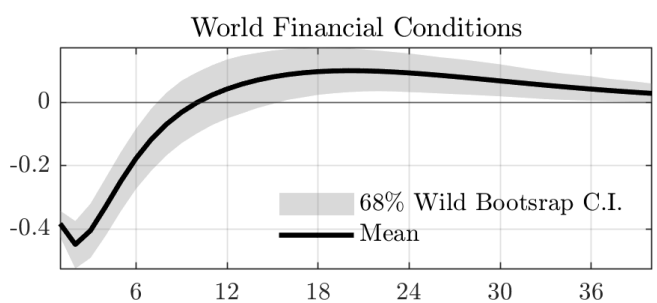
- Global demand shocks boost output and ease financial conditions.
- Lower uncertainty and temporary inventory declines confirm demand-driven dynamics.







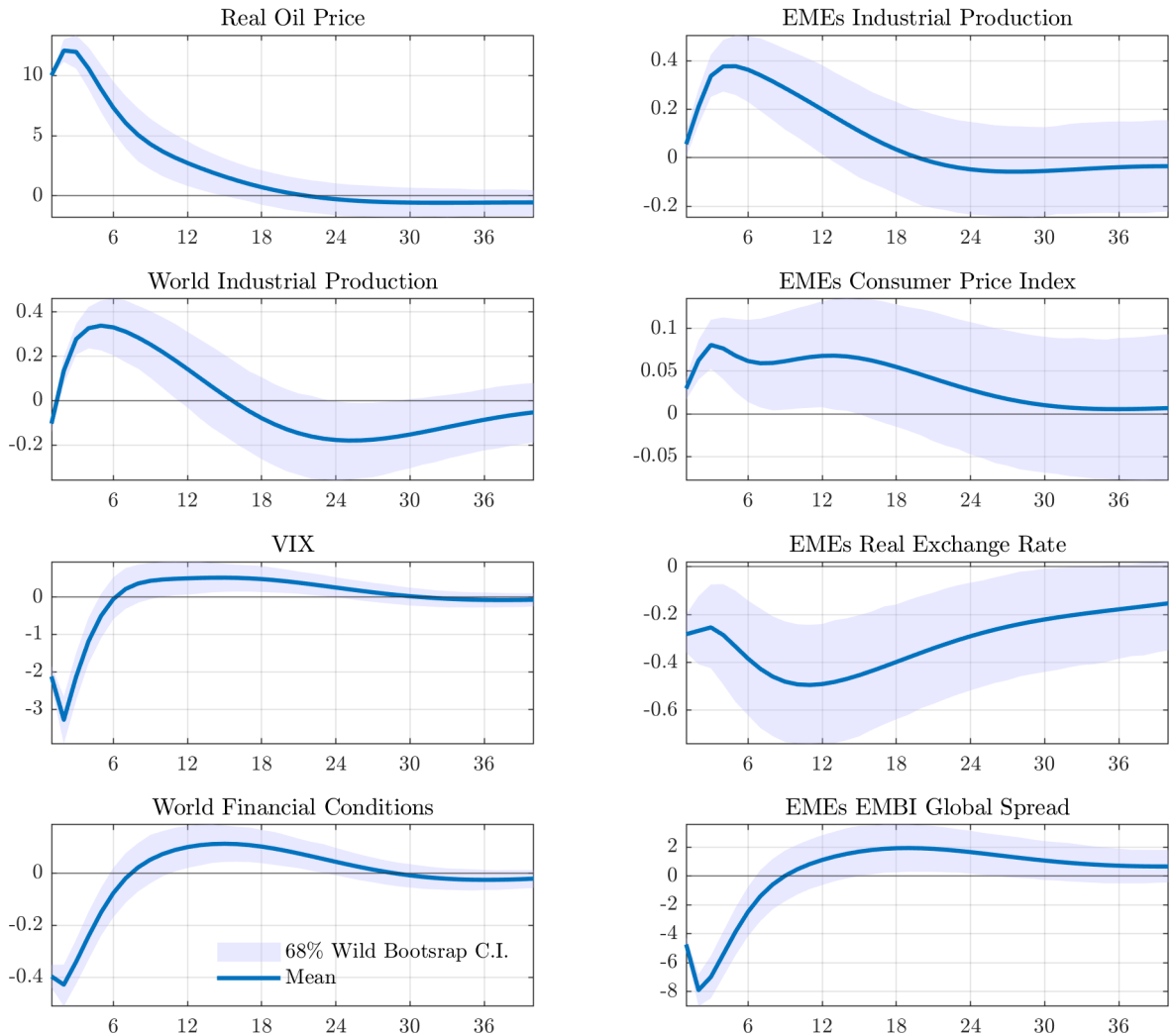




▸ Lags
▸ Futures
▸ EA/US
▸ Commodities

Emerging Markets Results

- An upward revision of the macroeconomic outlook stimulates industrial production and generates mild inflationary pressures.
- Currencies appreciate and sovereign spreads compress.

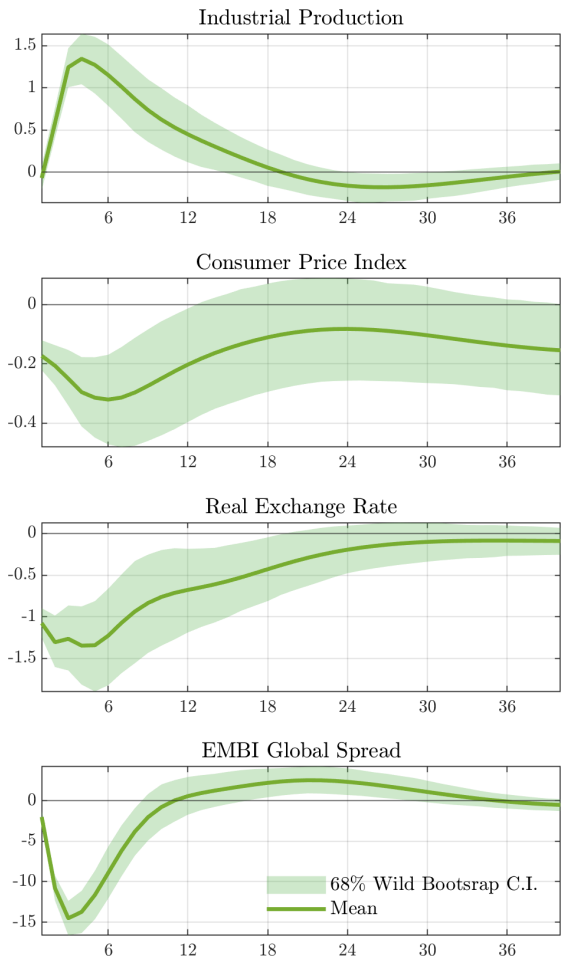


Lags
Futures
EA/US

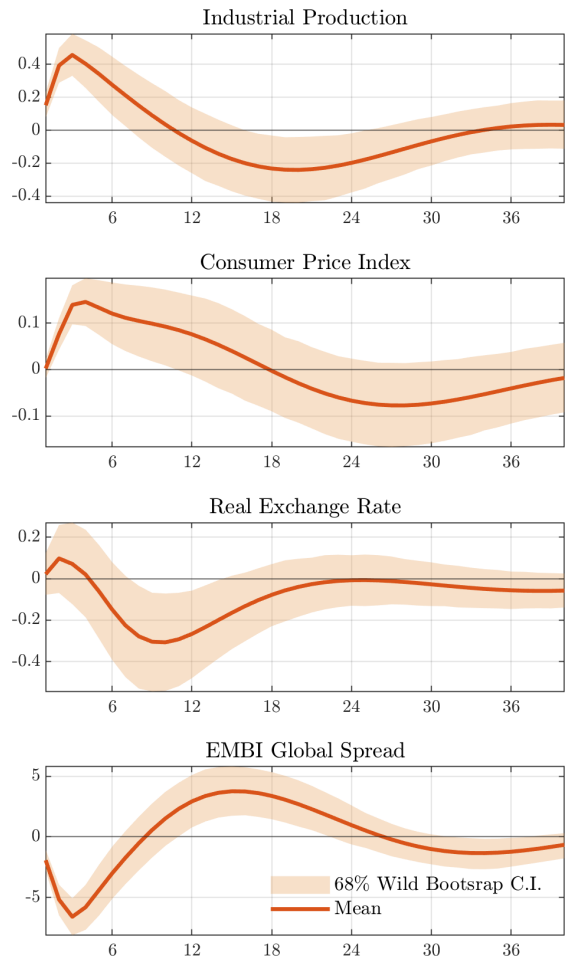
Heterogeneous Effects by Net Oil Trade Position

- Exporters exhibit stronger and more persistent gains in output, FX, and sovereign risk compression.
- Importers experience more modest responses and higher inflation

(a) Net Oil-Exporters EMEs



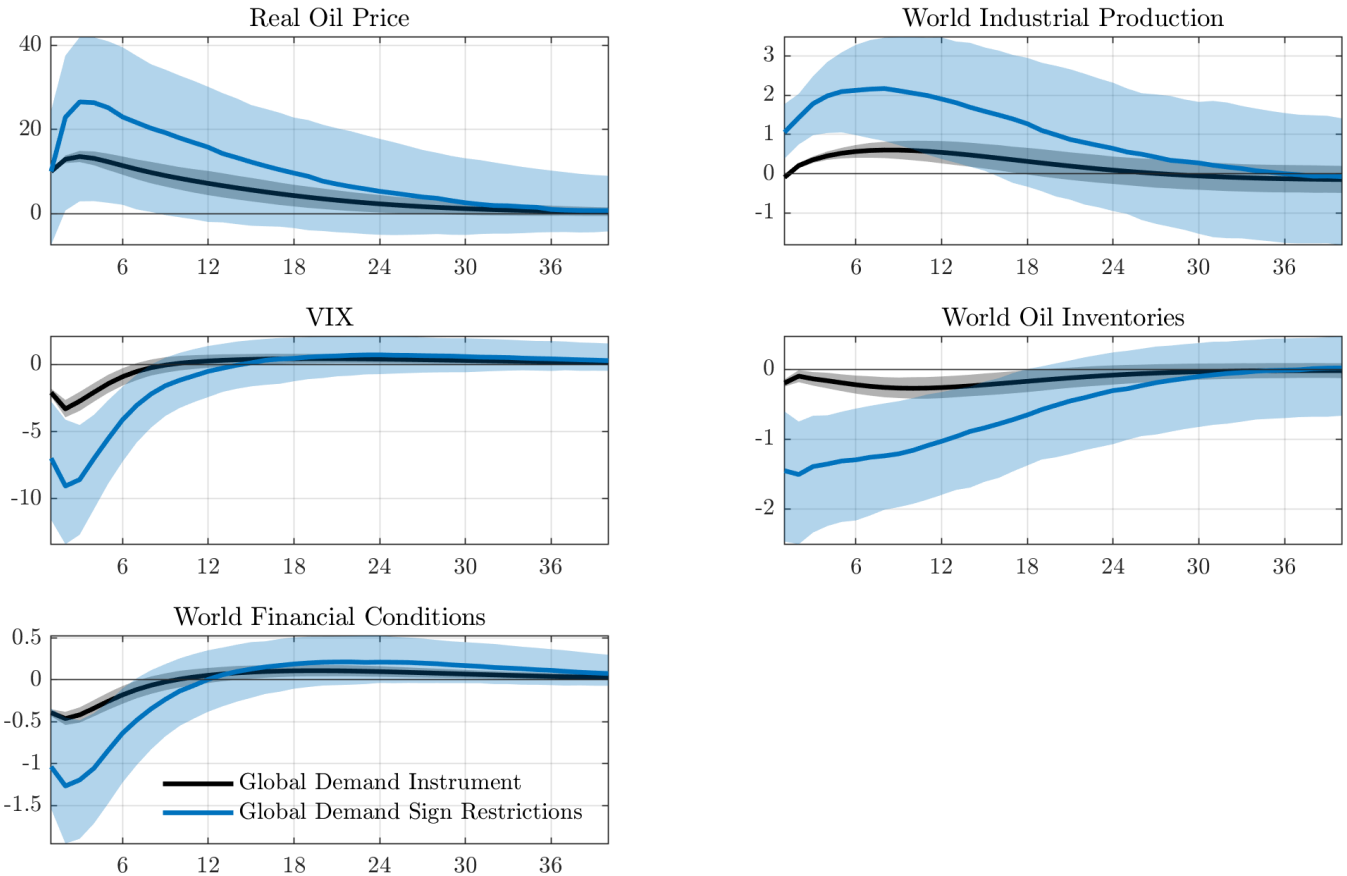
(b) Net Oil-Importers EMEs



▸ Lags
▸ Futures
▸ EA/US

Global Demand: Instrument and Sign Restrictions

- SR for Global Demand Shock: world industrial production (+), oil inventories (-), and VIX (-) over a 6-month horizon.
- Broad global demand shows more pronounced effects than our identification.



Robustness

We perform a set of robustness tests:

- Alternative lag structures for the VAR: results remain stable with one, two, or three lags. ▸ lags
- Different futures maturities: findings hold across maturities (1M, 2M, 3M, 6M, 12M). ▸ maturities
- Alternative instruments: using US or Euro Area employment announcements separately yields similar patterns. ▸ US/EA

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Main Takeaways: Macrofinancial Effects

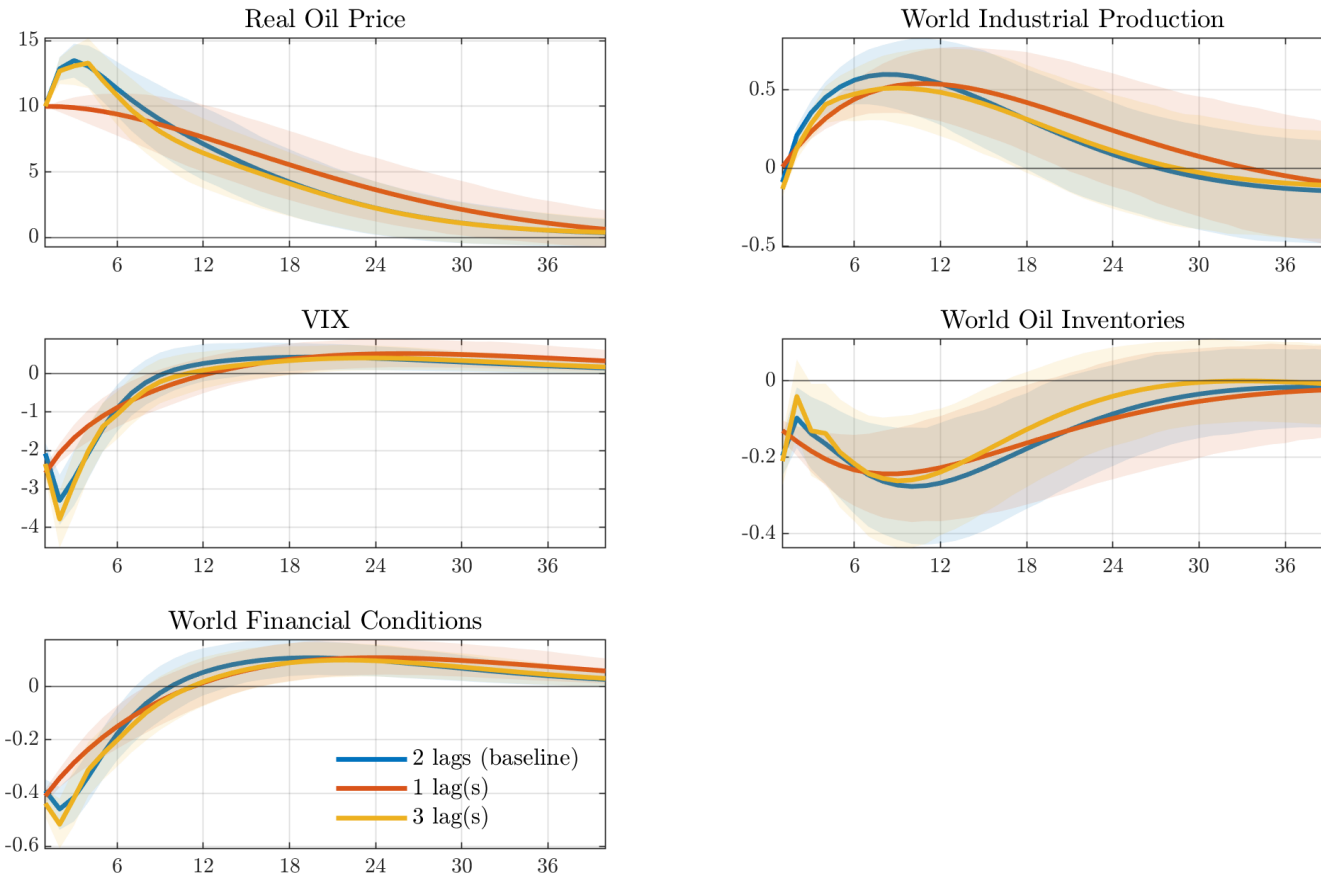
1. High-frequency oil futures movements around labor market releases offer a valid instrument for identifying global demand shocks.
2. Upward revisions to the global outlook boost industrial production, reduce uncertainty, and fuel risk appetite.
3. Good news travels fast for EMs: IP increases, sovereign spreads narrow, REER appreciates, and local prices increase.
4. Cross-country heterogeneity matters: exposure to oil markets shapes transmission.
5. Our identified global demand shocks tend to be milder than broader sign-restrictions shocks.
6. The persistence depends on how the oil market reacts: shocks affecting long(short)-term oil futures are interpreted as permanent (transitory), leading to stronger (weaker) effects.

Policy and Research Implications

- Proper identification of global shocks is essential for EME policy reaction.
- Oil price changes must be interpreted in **light of their underlying cause**.
- Our method extends the use of high-frequency identification to international macro.
- Opens avenues for future work: time-variation, other announcement types, nonlinearities.

Appendix

Global VAR Robustness: Lag Specification



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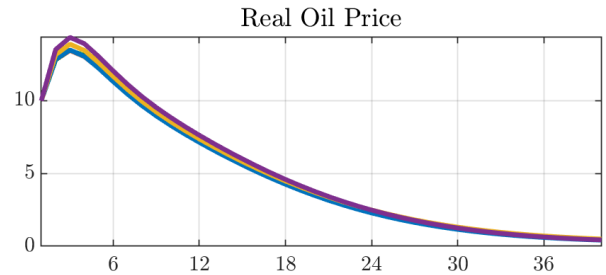
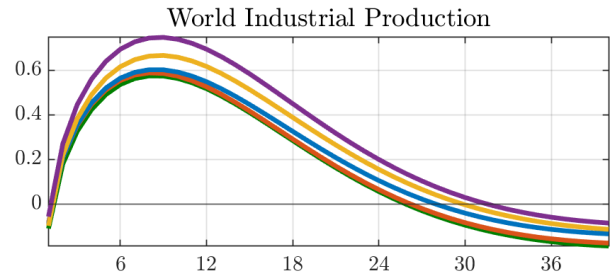
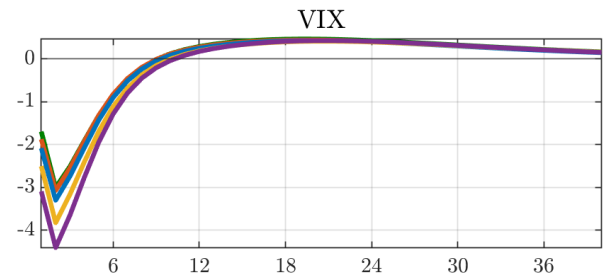
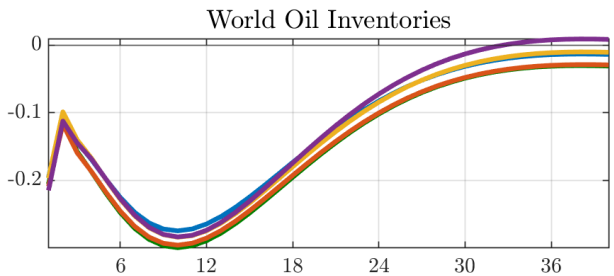
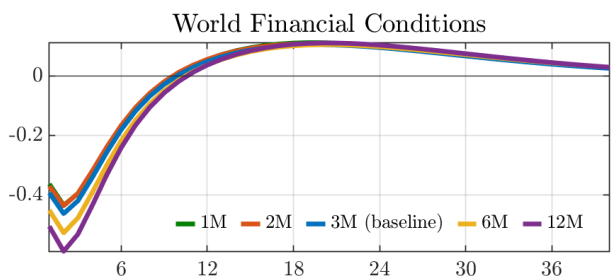
Global VAR Robustness: Futures Maturities











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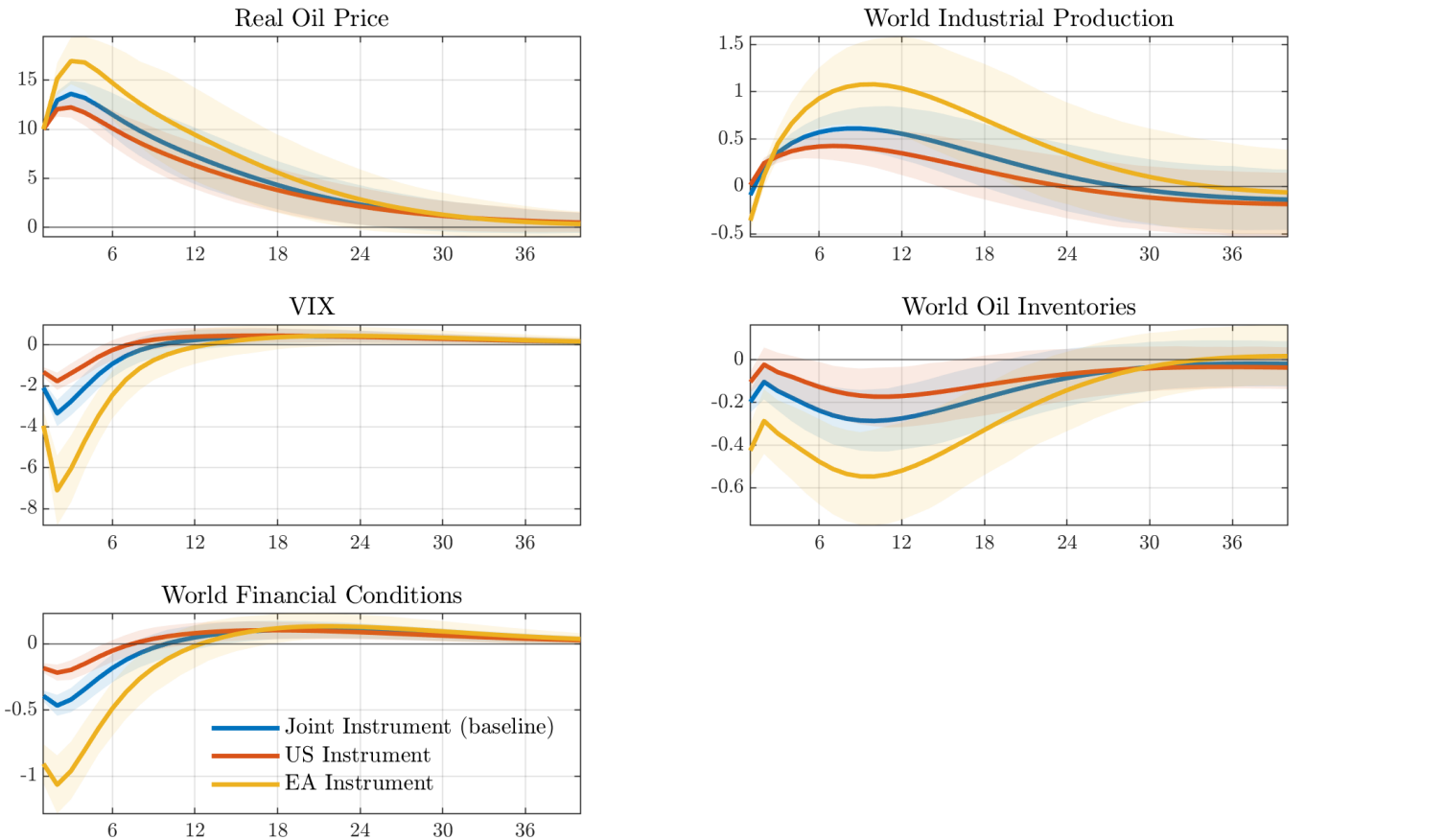
Global VAR Robustness: Separate Instruments



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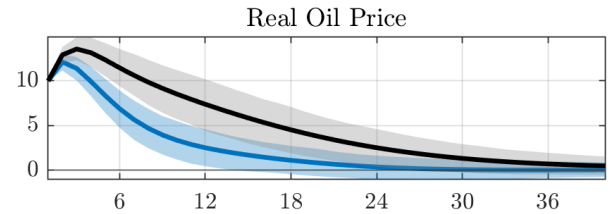
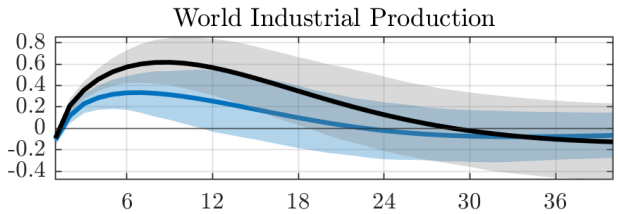
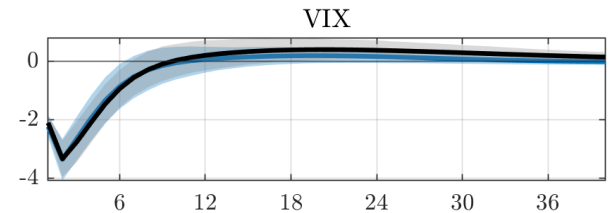
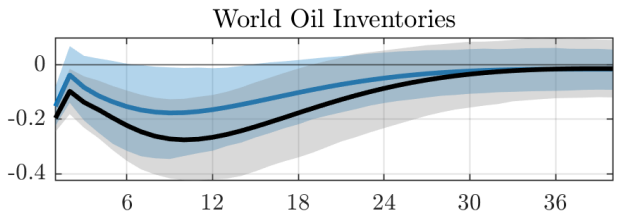
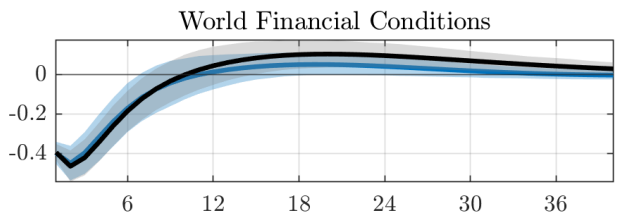
Global VAR Robustness: Other Commodities

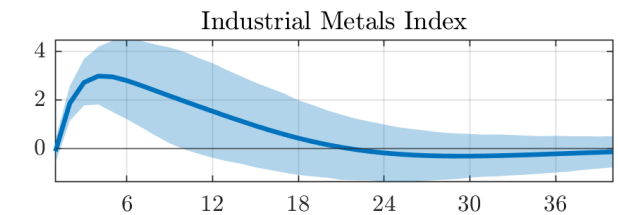


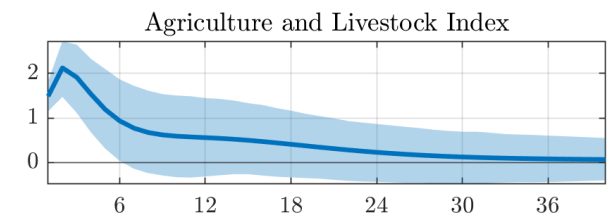


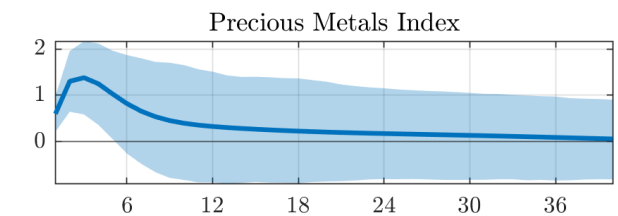












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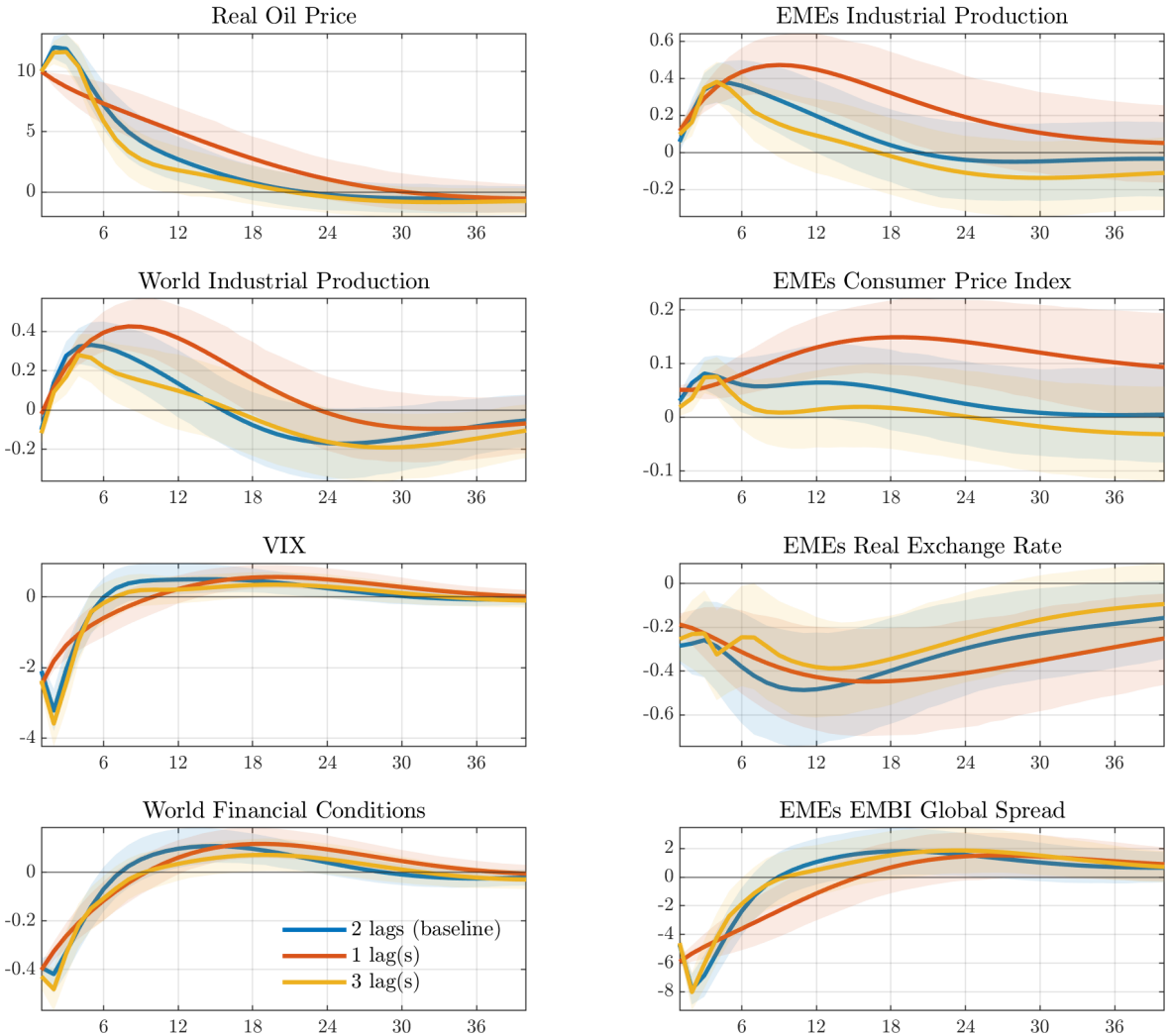
EMEs VAR Robustness: Lag Specification



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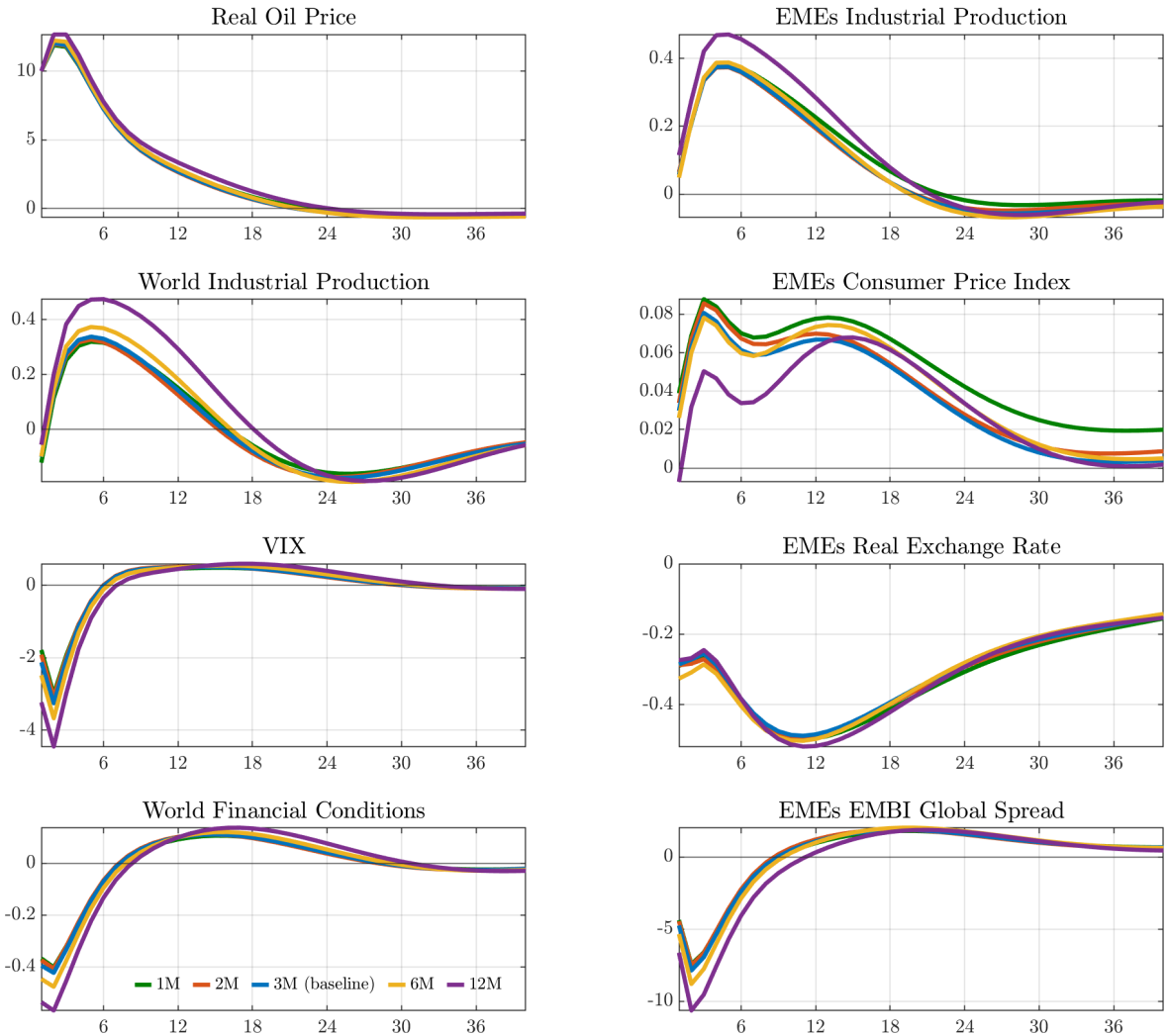
EMEs VAR Robustness: Futures Maturities



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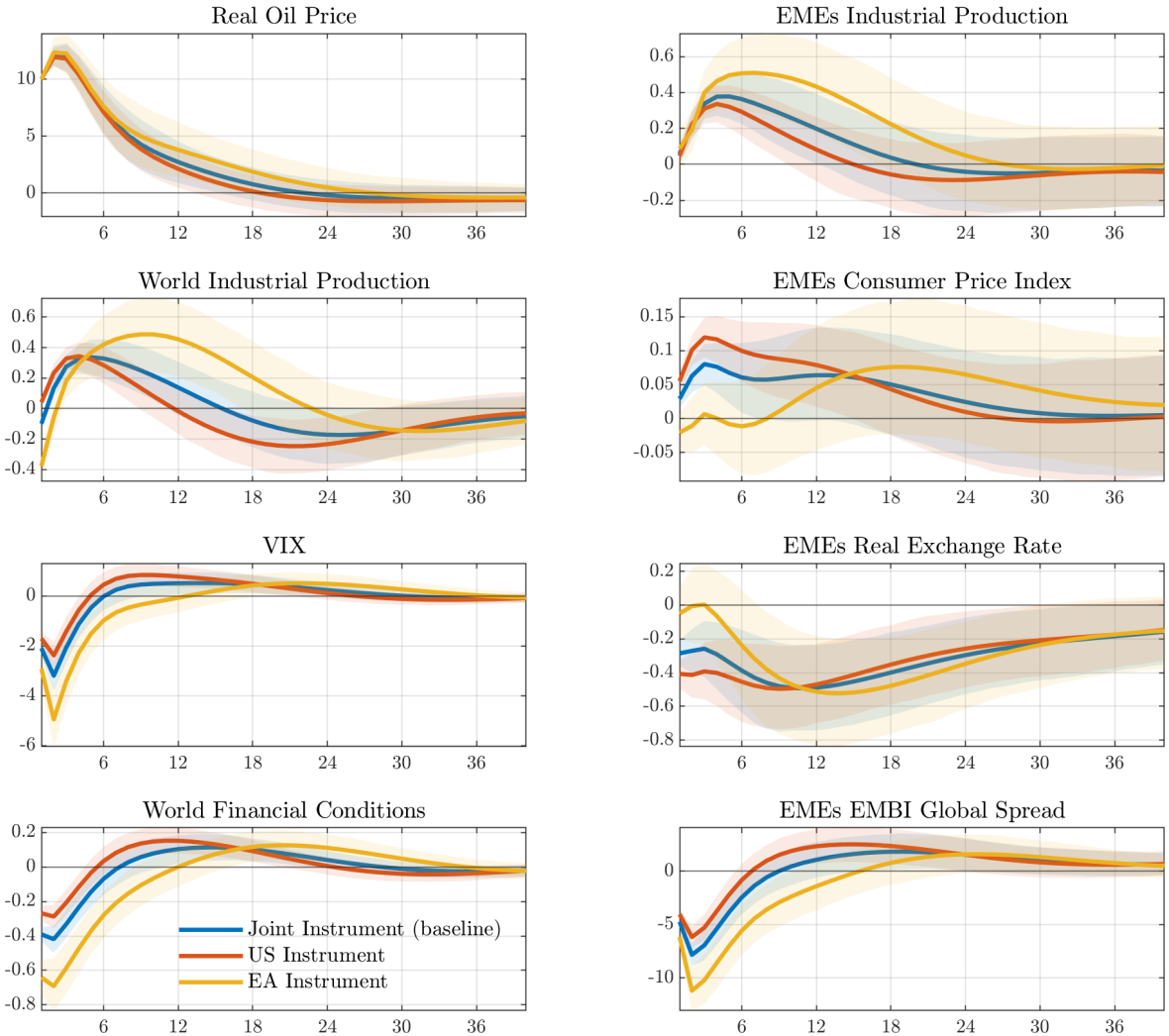
EMEs VAR Robustness: Separate Instruments



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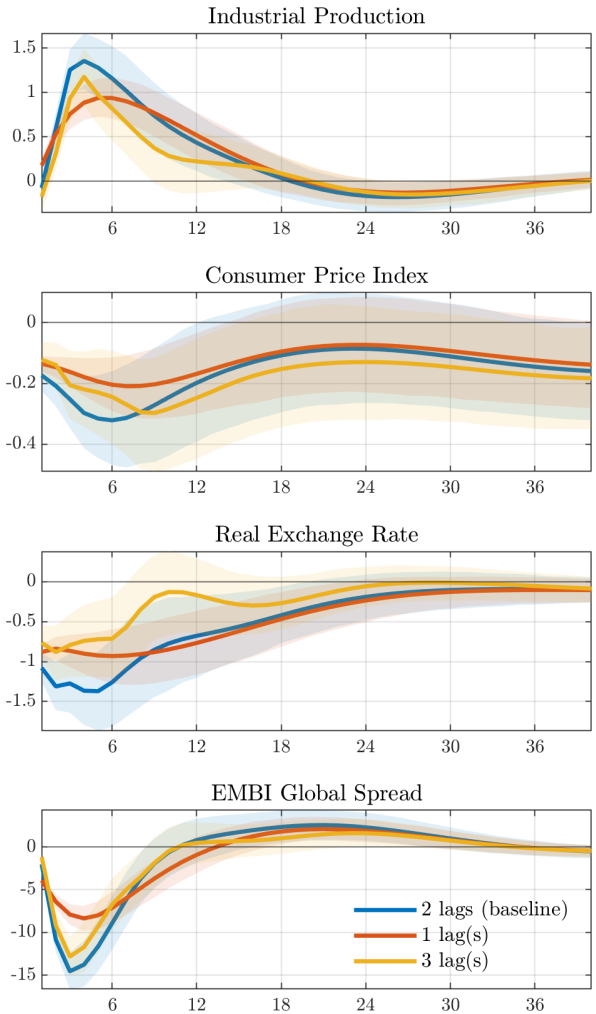
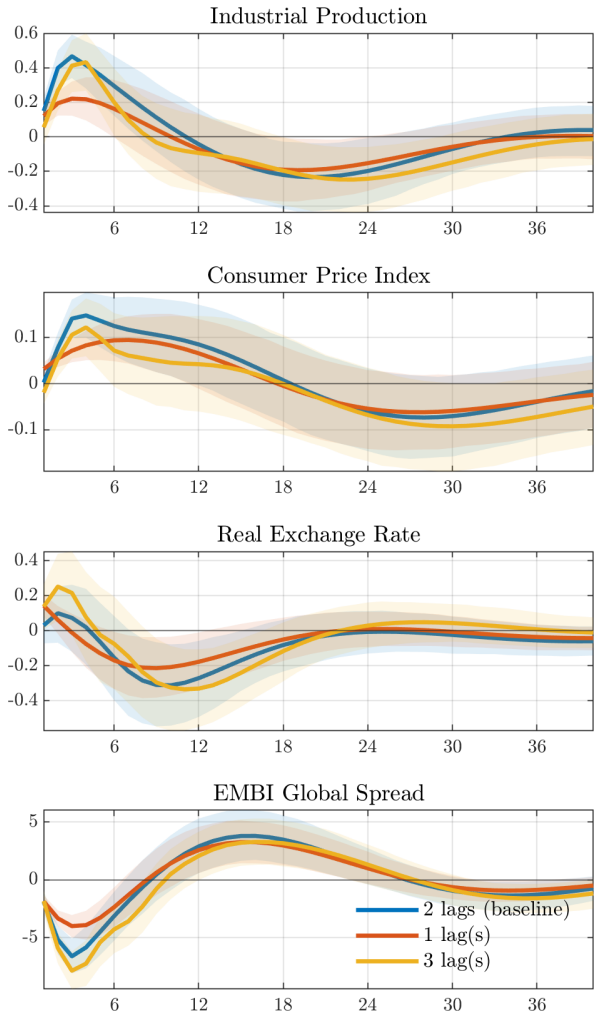
Net Oil Trade VAR Robustness: Lag Specification

(a) Net Oil-Exporters EMEs



(b) Net Oil-Importers EMEs



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Net Oil Trade VAR Robustness: Futures Maturities

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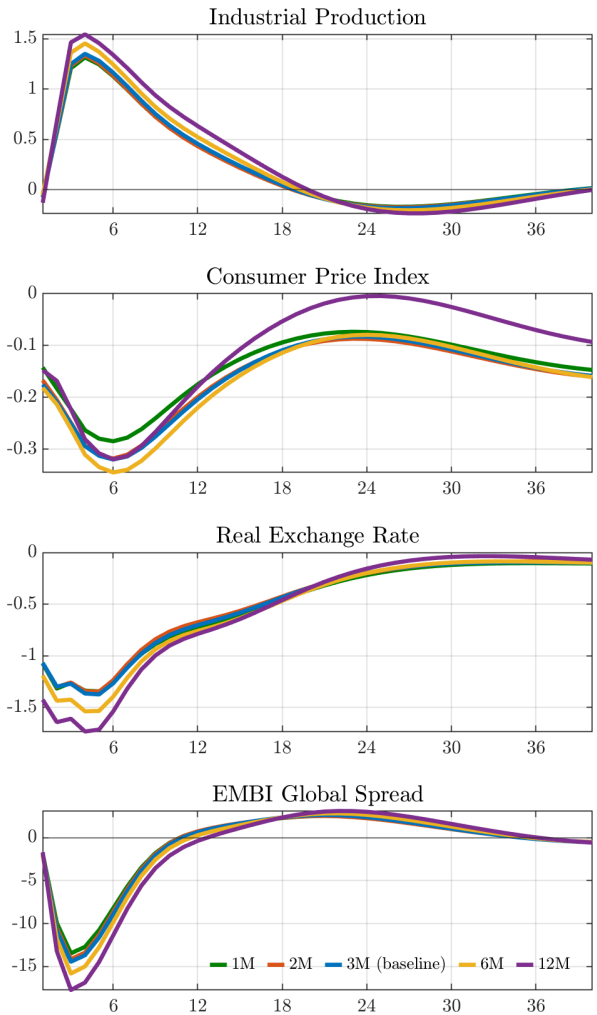
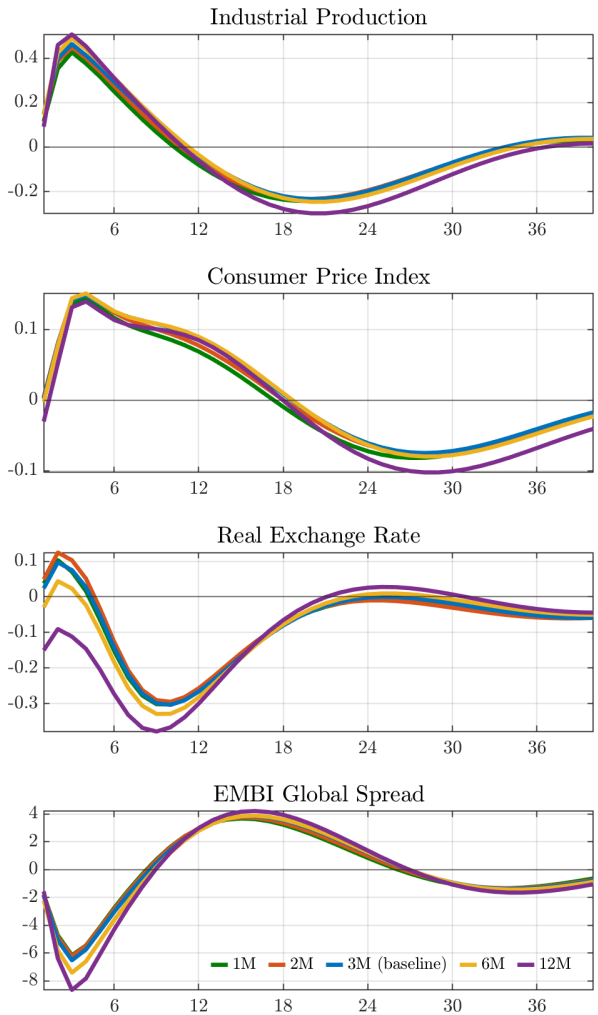


(b) Net Oil-Importers EMEs



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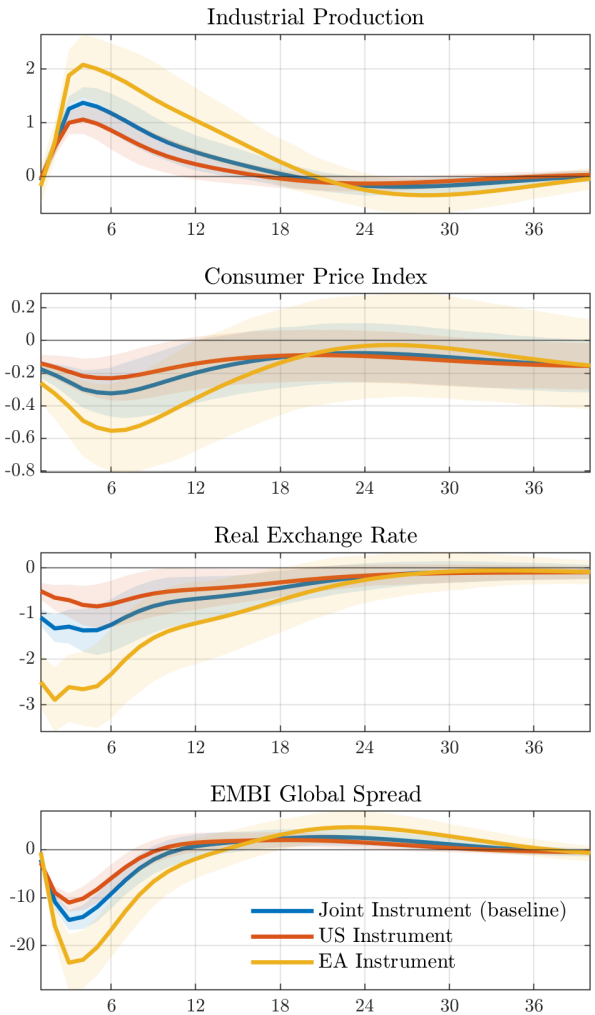
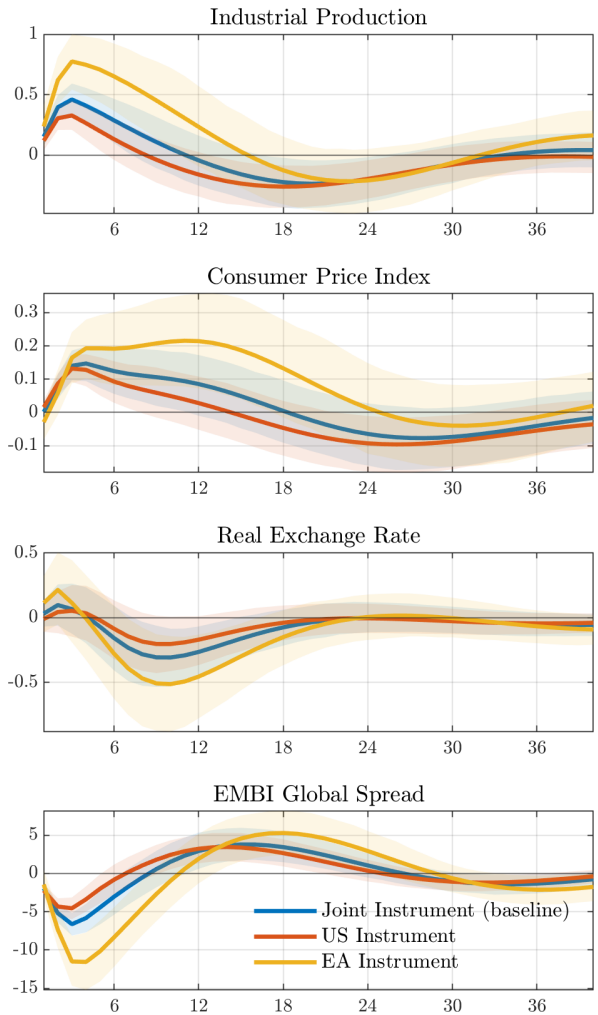
Net Oil Trade VAR Robustness: Separate Instruments

(a) Net Oil-Exporters EMEs



(b) Net Oil-Importers EMEs



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Summary Statistics

Table 3: Summary statistics of key variables and instruments

Variable	Unit	Mean	Abs. Mean	Std	Min	P25	Median	P75	Max
WTI Price	Δ%	0.67	6.56	8.44	-28.59	-4.74	1.72	5.82	23.85
WTI Price	ΔPrice	0.01	0.90	1.29	-9.79	-0.61	0.04	0.67	10.28
World IP	Δ%	0.19	0.48	0.62	-3.21	-0.13	0.23	0.55	1.86
VIX	Δ%	1.27	12.54	19.15	-31.13	-9.55	-2.22	7.21	103.07
World FCI	Z-score	0.37	0.80	1.31	-1.17	-0.39	-0.01	0.75	8.17
EMEs IP	Δ%	0.42	0.62	0.68	-2.57	0.14	0.43	0.78	4.06
EMEs CPI	Δ%	0.31	0.32	0.19	-0.29	0.20	0.31	0.42	1.21
EMEs REER	Δ%	-0.11	0.78	1.00	-2.31	-0.79	-0.19	0.39	3.28
EMEs EMBI	bps	411.81	411.81	173.49	159.95	303.51	360.69	443.04	979.21
US Announcement Surprise	ΔPrice	0.09	0.91	1.33	-4.04	-0.57	0.11	0.75	10.28
EA Announcement Surprise	ΔPrice	-0.07	0.88	1.25	-5.58	-0.58	0.10	0.65	3.48
Combined Surprise	ΔPrice	0.03	1.34	1.88	-7.40	-0.91	0.06	0.96	9.42

Note: Summary statistics are based on monthly data from 2000 to 2019. The first set of variables (WTI Price, World IP, VIX, EMEs IP, EMEs CPI, EMEs REER) are expressed as month-over-month percentage changes. The EMBI is expressed in basis points. An increase in the REER is interpreted as a depreciation of EMEs' currencies. The last three variables correspond to our instruments, surprise movements in oil futures prices around employment announcements in the US and Euro Area, and are expressed as daily changes in oil prices.

Emerging Markets Classification

Table 4: Emerging Markets Classification

Country	Weight	Net Oil Position
China	36.5%	Importer
India	15.5%	Importer
Russia	6.6%	Exporter
Brazil	4.5%	Exporter
Indonesia	4.5%	Importer
Türkiye	3.3%	Importer
Mexico	3.2%	Exporter
Egypt	2.1%	Exporter
Saudi Arabia	2.0%	Exporter
Poland	1.8%	Importer
Thailand	1.7%	Importer
Islamic Republic of Iran	1.6%	Exporter
Bangladesh	1.6%	Importer
Vietnam	1.6%	Importer
Pakistan	1.5%	Importer
Nigeria	1.4%	Exporter
Malaysia	1.3%	Exporter
Philippines	1.3%	Importer
Colombia	1.1%	Exporter
South Africa	0.9%	Importer
Romania	0.9%	Importer
United Arab Emirates	0.8%	Exporter
Kazakhstan	0.8%	Exporter
Algeria	0.8%	Exporter
Iraq	0.7%	Exporter
Chile	0.6%	Importer
Ukraine	0.6%	Importer
Peru	0.6%	Importer
Argentina*	0.0%	Exporter
Venezuela*	0.0%	Exporter

Note: The 30 countries shown are the largest emerging markets (EMEs), selected based on their GDP in PPP terms from the IMF's WEO. *Argentina and Venezuela are excluded due to persistent inflation and data inconsistencies, and are assigned a GDP share of zero. The column Weights reports each country's share of total EMEs GDP, normalized to sum to 100%. Net Oil Position classifies countries as net importers or exporters using the latest crude oil trade data from the US Energy Information Administration (EIA). Data availability for the macroeconomic variables used in the analysis (IP, CPI, REER, EMBI) covers 73%, 95%, 99%, and 88% of total EMEs GDP, respectively.

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F-statistics

1. **Regression performed:**

$$\hat{\epsilon}^{wti} = \beta z + u, \quad z = \begin{bmatrix} z_1 \\ \vdots \\ z_T \end{bmatrix} \ (T \times 1), \qquad \hat{\beta} = (z'z)^{-1} z' \hat{\epsilon}^{wti}$$

2. **Residual variance and s.e.:** with $k = 1$ regressor and no intercept,

$$\hat{s}^2 = \frac{\text{SSR}}{T-k} = \frac{\sum \hat{u}_i^2}{T-1}, \qquad \text{se}(\hat{\beta}) = \sqrt{\hat{s}^2 \, (z'z)^{-1}}$$

3. **t-stat for** $H_0 : \beta = \beta_0$:

$$t = \frac{\hat{\beta} - \beta_0}{\text{se}(\hat{\beta})} = \frac{\hat{\beta} - \beta_0}{\sqrt{\hat{s}^2 \, (z'z)^{-1}}} \ \Rightarrow \ \boxed{t^2 = \frac{(\hat{\beta} - \beta_0)^2 \, z'z}{\hat{s}^2}}$$

4. **Wald/F with one restriction:** write $R\beta = r$ with $R = [1]$, $r = \beta_0$, $q = 1$:

$$F = \frac{(R\hat{\beta} - r)' \left[R(z'z)^{-1} R' \right]^{-1} (R\hat{\beta} - r)}{q \, \hat{s}^2} = \boxed{\frac{(\hat{\beta} - \beta_0)^2 \, z'z}{\hat{s}^2}}$$

5. Thus $F = t^2$.

Lag length selection criteria for baseline mode

Table 5: Lag length selection criteria for baseline mode

	Global		EMEs		Exporter		Importer	
Lag	SIC	HQ	SIC	HQ	SIC	HQ	SIC	HQ
1	**-10.40**	-10.67	**-29.76**	-30.41	**-25.05**	-25.89	**-28.38**	**-29.21**
2	-10.35	**-10.84**	-29.28	**-30.51**	-24.75	**-26.33**	-27.6	-29.18
3	-10.02	-10.74	-28.34	-30.14	-23.79	-26.11	-26.48	-28.80
4	-9.70	-10.65	-27.27	-29.64	-22.33	-25.40	-24.96	-28.03
5	-9.30	-10.47	-26.21	-29.17	-20.76	-24.57	-23.52	-27.33
6	-8.83	-10.23	-25.06	-28.59	-19.21	-23.76	-22.06	-26.61
7	-8.46	-10.08	-23.85	-27.95	-17.78	-23.07	-20.68	-25.97
8	-8.03	-9.87	-22.62	-27.30	-16.57	-22.60	-19.66	-25.69
9	-7.62	-9.68	-21.54	-26.80	-15.83	-22.61	-18.68	-25.46
10	-7.18	-9.48	-20.6	-26.44	-14.8	-22.32	-17.65	-25.17
11	-6.71	-9.23	-19.49	-25.90	-13.65	-21.92	-16.71	-24.98
12	-6.23	-8.98	-18.46	-25.45	-12.90	-21.91	-16.03	-25.04

Note: This table reports the lag length selection criteria for the baseline VAR model using monthly data. The Global and EMEs specification uses data from February 2000 to December 2019, while the Exporter and Importer models are estimated from January 2006 to December 2019 due to limited data availability. Selection is based on the Schwarz (SIC), and Hannan-Quinn (HQ) information criteria. The bold entries indicate the selected lag order under each criterion.

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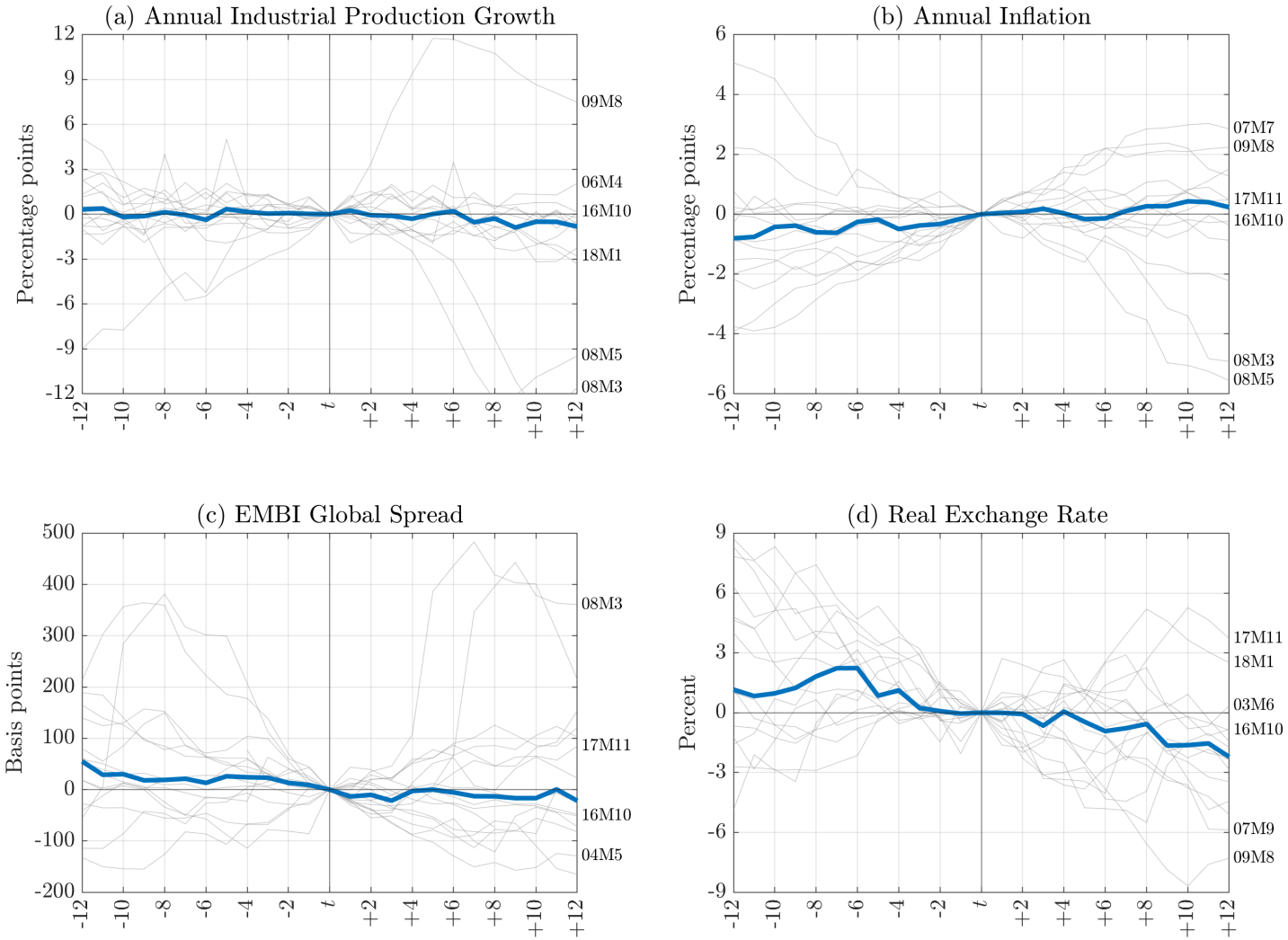
A 10% real oil price increase has mixed effects



Note: The figure shows the empirical dynamics over 12 months around a 10±1% month-to-month real oil price increase. The bold blue line represents the median across all events depicted by the gray lines. All figures are expressed as deviations relative to the value at time t. An increase in the REER is interpreted as a depreciation of EMEs' currencies.

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