The US, Economic News, and the Global Financial Cycle

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Global Financial Cycle (GFC)

Definition

- *The global financial cycle appears in co-movements of gross flows, asset prices, leverage, and credit creation....* (Rey, 2013)

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Common narrative

- External source of volatility hard to shield against
  - In good times: asset prices $\uparrow$, credit $\uparrow$, leverage $\uparrow$, capital inflows > 0
  - In bad times: asset prices $\downarrow$, credit $\downarrow$, leverage $\downarrow$, capital inflows < 0

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- External source of volatility hard to shield against
- But: narrative mostly based on correlations, alternative interpretations possible (Bernanke, 2017)
    - E.g.: GFC could be driven by common shocks

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⇒ **Need better understanding of GFC!**

- How can we establish causal links?
- What can we learn about mechanisms?

This Paper

1. **Study effect of US macro news on intl. risky asset prices**
   - Intraday event study $\Rightarrow$ clean identification
   - Caveat: news surprise $\neq$ structural shock
   - Macro release surprises (GDP, nonfarm payrolls,...)
   - Stock indexes of 27 countries, VIX, and commodity prices

This Paper

1. **Study effect of US macro news on intl. risky asset prices**

2. **Quantify persistence of effect at lower frequencies**
   - Two-step approach by Altavilla et al. (2017)
   - Explanatory power at monthly and quarterly frequencies

This Paper

1. **Study effect of US macro news on intl. risky asset prices**

2. **Quantify persistence of effect at lower frequencies**

3. **Study underlying mechanisms**
   - Common shock or transmission?
     $\Rightarrow$ Study macro news of other G7 countries
   - Stock prices driven by interest rates, risk premium, or cash flows?
     $\Rightarrow$ Study stock-bond correlation
   - Role of financial integration & exchange rate

Preview of Findings

Three new empirical facts

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Three new empirical facts

US macro news

1. have strong effects on intl. risky asset prices
    - E.g. GDP $\uparrow \Rightarrow$ stock prices $\uparrow$, VIX $\downarrow$, and commodity prices $\uparrow$
    - Magnitude similar to S&P 500 response

Preview of Findings

Three new empirical facts

US macro news

1. have strong effects on intl. risky asset prices
2. generate co-movement in stock markets across countries
    - Stock markets respond in the same direction to US macro news
    - Defining feature of GFC

Preview of Findings

Three new empirical facts

US macro news

1. have strong effects on intl. risky asset prices
2. generate co-movement in stock markets across countries
3. explain sizable fraction of variation at lower frequencies
    - $\approx$ 15% of intl. stock markets at quarterly frequency (18% of S&P 500)
    - E.g. 17% of Italian FTSE MIB
    - Much more than US monetary policy *shocks*

Preview of Findings

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$\Rightarrow$ Supports view of US as origin or hub of GFC

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Underlying mechanism

1. Findings not driven by common shocks
    - Macro news of other G7 countries do not have similar effects

Preview of Findings

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Underlying mechanism

1. Findings not driven by common shocks
2. Results consistent with effect on investors' risk-taking behavior

   $\Rightarrow$ US monetary policy cannot explain findings

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1. Findings not driven by common shocks
2. Results consistent with effect on investors' risk-taking behavior
3. Countries' responsiveness correlated with financial integration

   $\Rightarrow$ Consistent with models of financial market frictions

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Related Literature

- Global financial cycle:
  - Antecedents: Diaz-Alejandro (1983, 1984); Calvo et al. (1993, 1996); Reinhart and Reinhart (2008)
  - Existence, implications, and US monetary policy: Rey (2013); Bruno and Shin (2015); Obstfeld (2015); Jordà et al. (2019); Cerutti et al. (2019); Monnet and Puy (2019); Miranda-Agrippino et al. (2020)

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- US as center of intl. monetary and financial system:
  - World banker: Gourinchas and Rey (2007)
  - Dollar dominance: Goldberg and Tille (2008); Gopinath (2015); Gopinath et al. (2020); Maggiori et al. (2020)

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- US macro news and asset prices:
  - Domestic: McQueen and Roley (1993); Boyd et al. (2005); Rigobon and Sack (2008); Beechey and Wright (2009); Swanson and Williams (2014); Gilbert et al. (2017); Law et al. (2018); Gürkaynak et al. (2018)
  - International: Faust et al. (2007); Andersen et al. (2007); Ehrmann et al. (2011)

Outline

1. Research Design
2. Data
3. High-frequency Effects of US Macro News on GFC
4. Explanatory Power of US Macro News
5. Inspecting the Mechanism
6. Conclusion

1. Research Design

Research Design

Surprises

- Surprise of US macro series y for announcement time t:

$$s^{y}_{US,t} = \frac{y_{US,t} - E\left[y_{US,t}|\mathcal{I}_{t-\Delta^-}\right]}{\hat{\sigma}^{y}_{US}}$$

- Example: *nonfarm payroll employment* (y) published at *8:30 am ET on first Friday for given month* (t) by US Bureau of Labor Statistics

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Estimating equation

$$\Delta q_{i,t} = \gamma^{y}_{i} s^{y}_{US,t} + \varepsilon_{i,t}$$

- $q_{i,t}$: (log of) country i's asset price of interest
- Δ: 30-minute change around announcement time t
- Identification assumption: $\varepsilon_{i,t}$ uncorrelated with $s^{y}_{US,t}$
  $\Rightarrow \gamma^{y}_{i}$ can be consistently estimated by OLS and measures causal effect

Structural Interpretation of γ_i^y

Estimation Equation: $\Delta q_{i,t} = \gamma_i^y \, s_{US,t}^y + \varepsilon_{i,t}$

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How to interpret γ_i^y?

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Estimation Equation: $\Delta q_{i,t} = \gamma_i^y s_{US,t}^y + \varepsilon_{i,t}$

How to interpret γ_i^y?

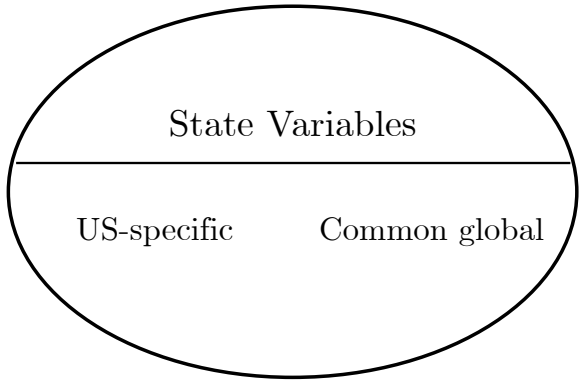
$\Rightarrow$ **Build Framework**

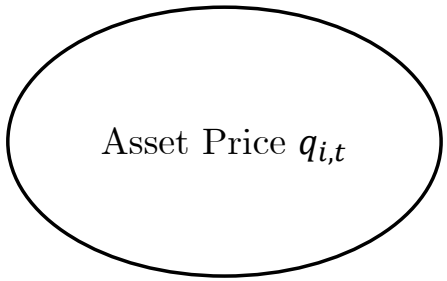
- Extension of Faust et al. (2007) to international setting
- Log-linear multi-country world with a unique equilibrium

Structural Interpretation of γ_i^y

Estimation Equation: $\Delta q_{i,t} = \gamma_i^y s_{US,t}^y + \varepsilon_{i,t}$

How to interpret γ_i^y?





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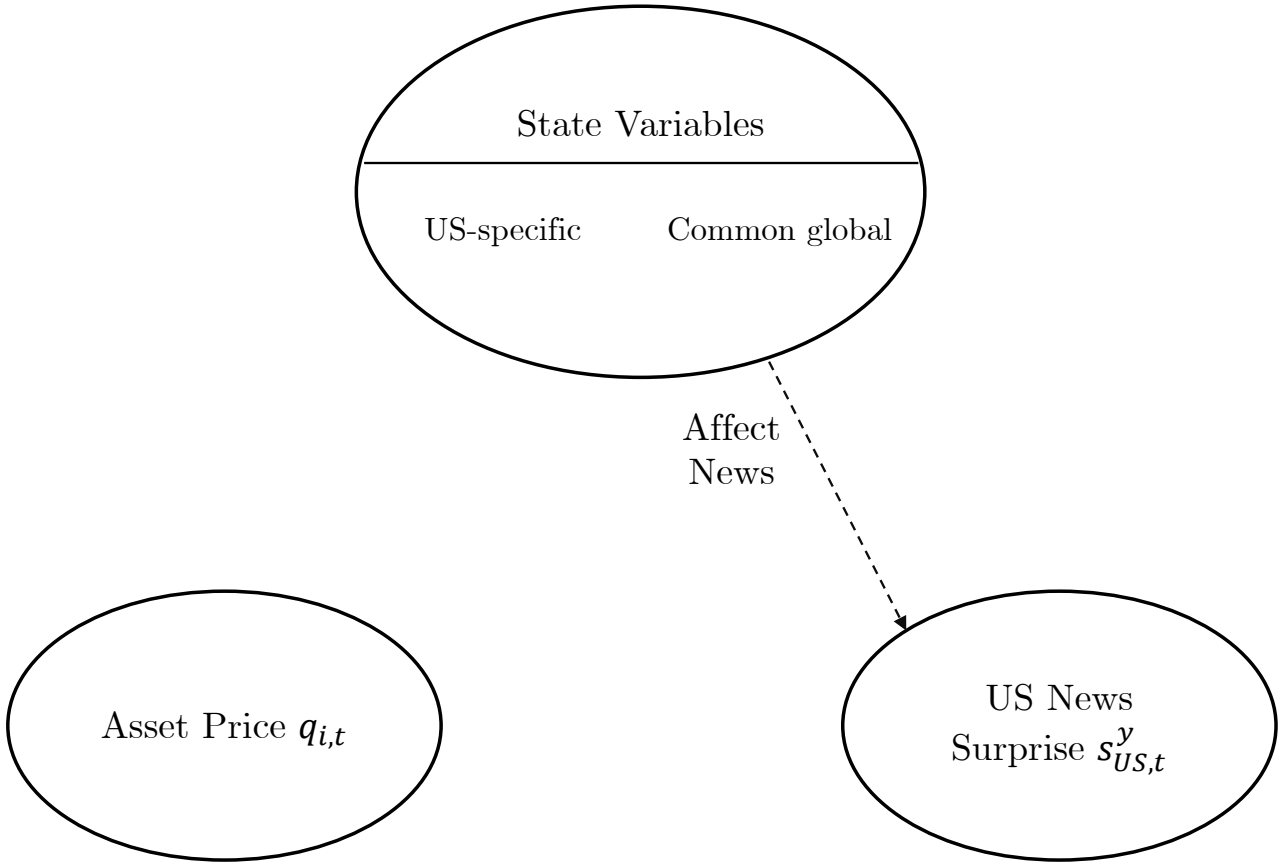

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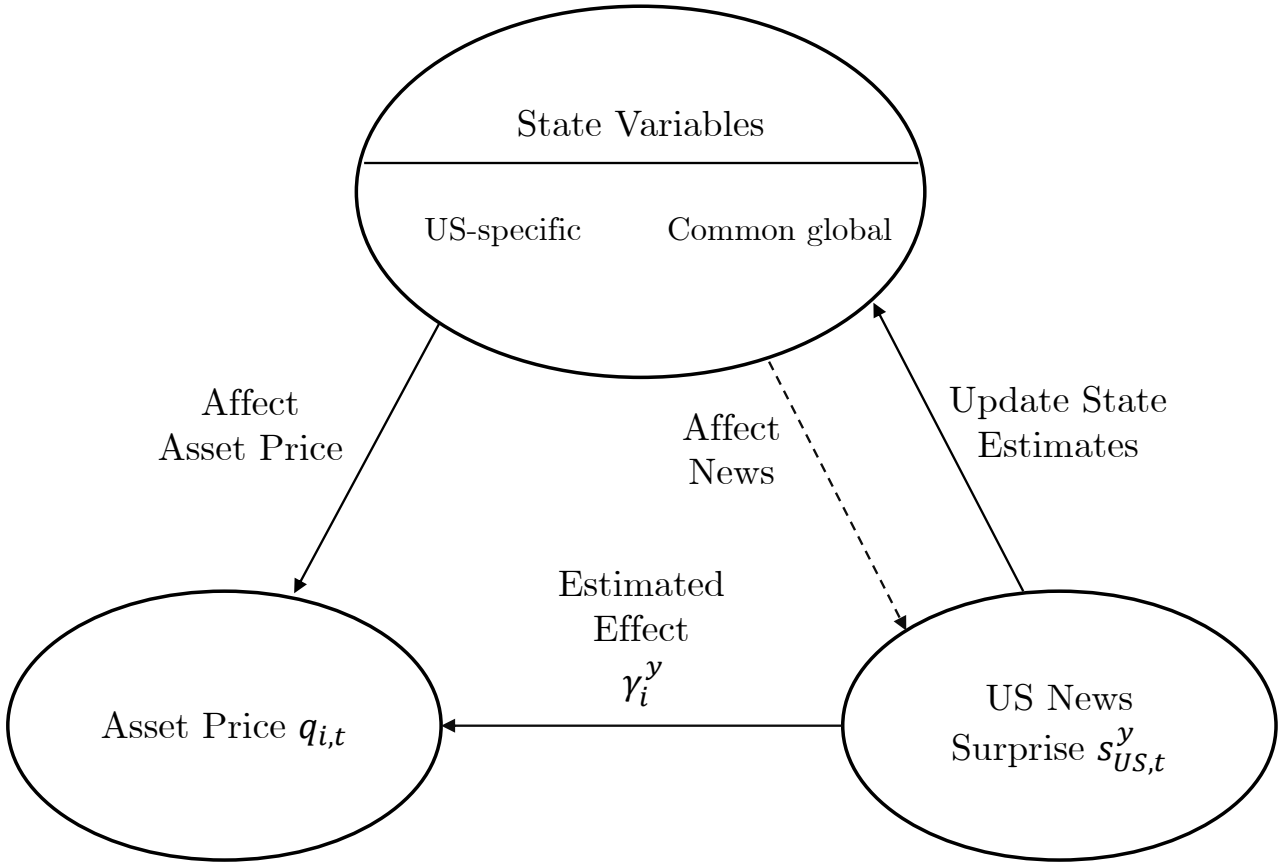

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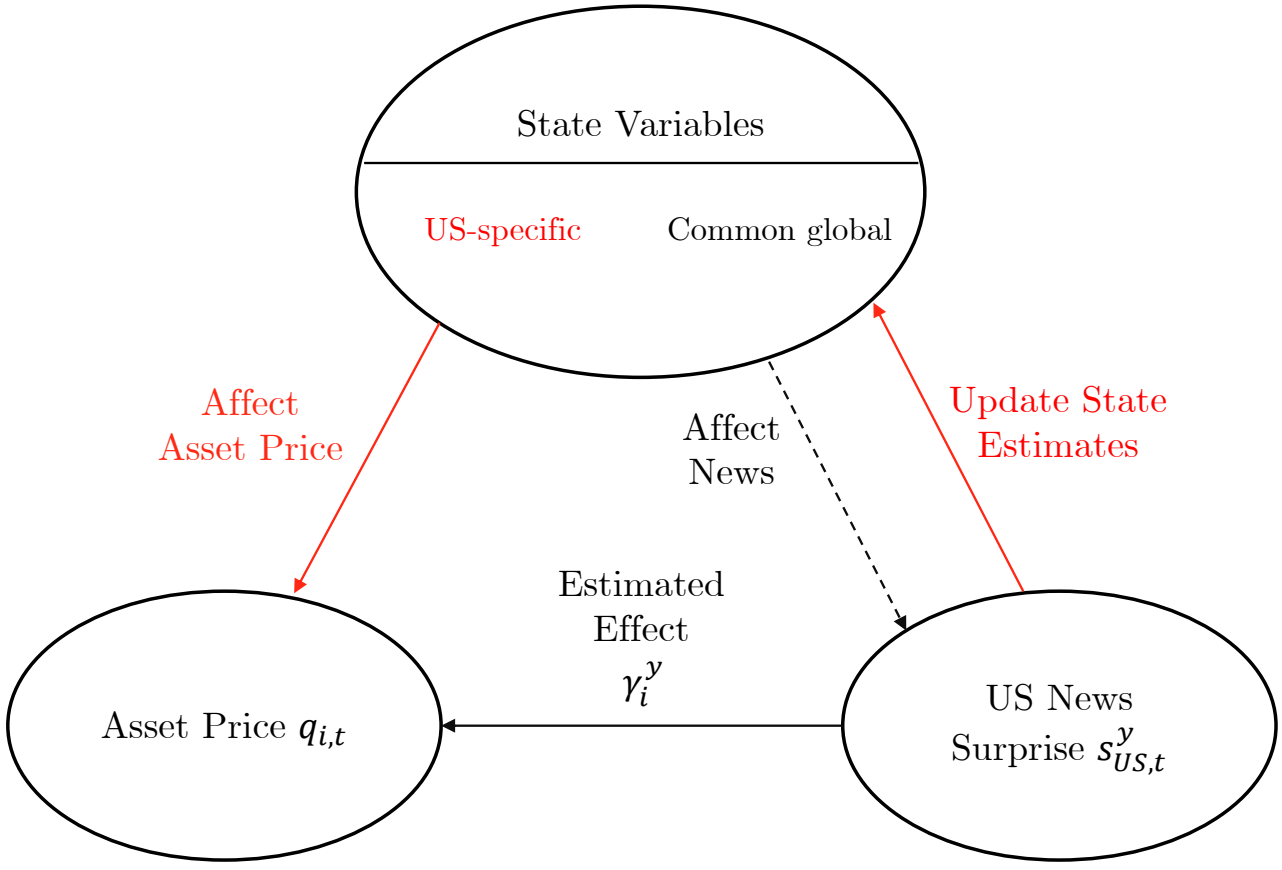

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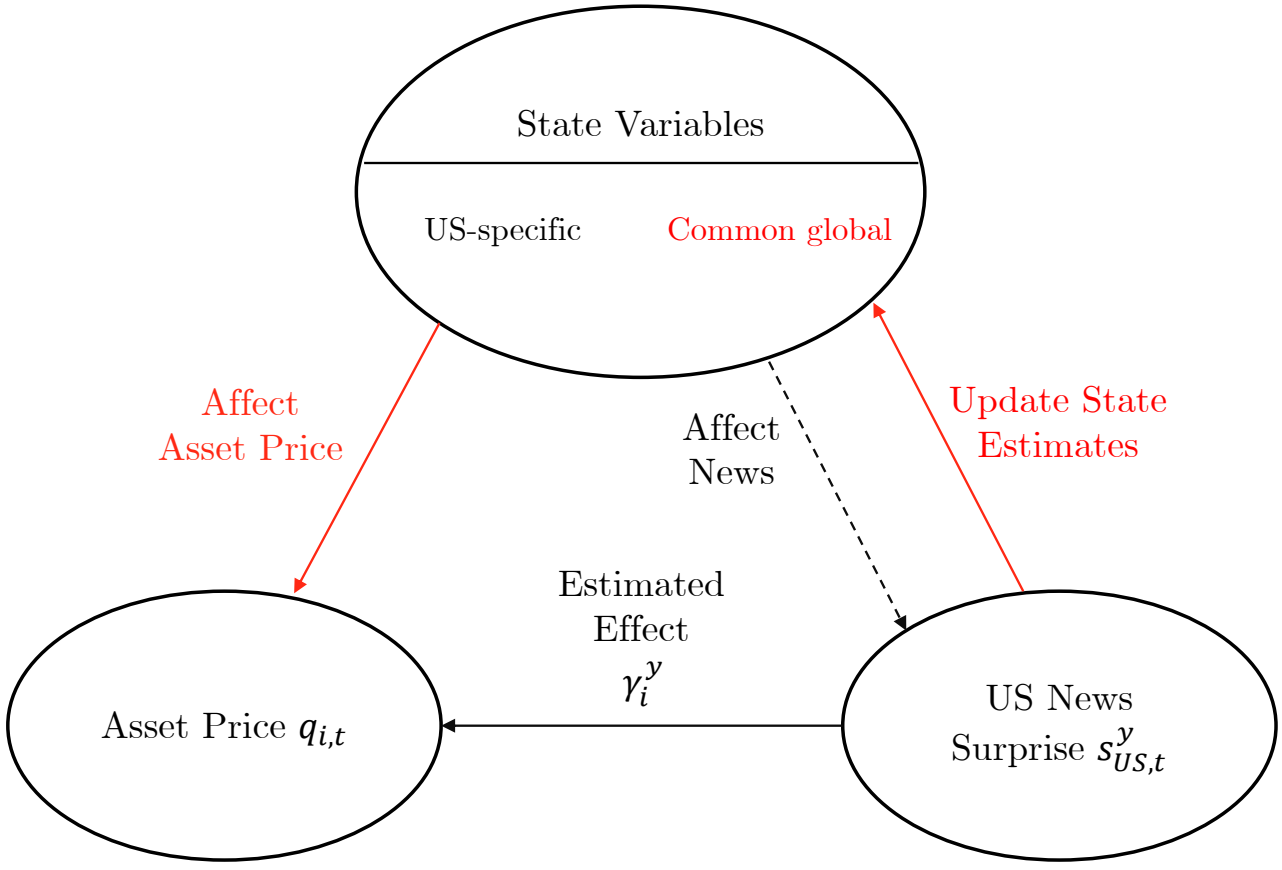

Role of Monetary Policy

What role does US monetary policy play in analysis?

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- Timing of macro releases generally differs from Fed releases

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$\Rightarrow$ Monetary policy shocks are not reflected in analysis

$\Rightarrow$ But: expected systematic monetary policy reaction to macro surprise will affect asset price response

2. Data

US Macro News

Data Overview

- Source: Bloomberg Economic Calendar
- Release date and time, value, median market expectation prior to release
- Sample period: November 1997 - June 2019
- Broad set of US macro news releases (66 Series)

US Macro News

Focus on 12 major releases

	Release Time	Frequency	Category	Observations
Capacity Utilization	9:15 am	Monthly	Real Activity	268
CB Consumer Confidence	10:00 am	Monthly	Real Activity	268
Core CPI	8:30 am	Monthly	Price	269
Core PPI	8:30 am	Monthly	Price	269
Durable Goods Orders	8:30 am	Monthly	Real Activity	260
GDP A	8:30 am	Quarterly	Real Activity	89
Initial Jobless Claims	8:30 am	Weekly	Real Activity	1140
ISM Mfg Index	10:00 am	Monthly	Real Activity	271
New Home Sales	10:00 am	Monthly	Real Activity	261
Nonfarm Payrolls	8:30 am	Monthly	Real Activity	268
Retail Sales	8:30 am	Monthly	Real Activity	270
UM Consumer Sentiment P	10:00 am	Monthly	Real Activity	241

▸ Figure — Time Series ▸ Table — All News

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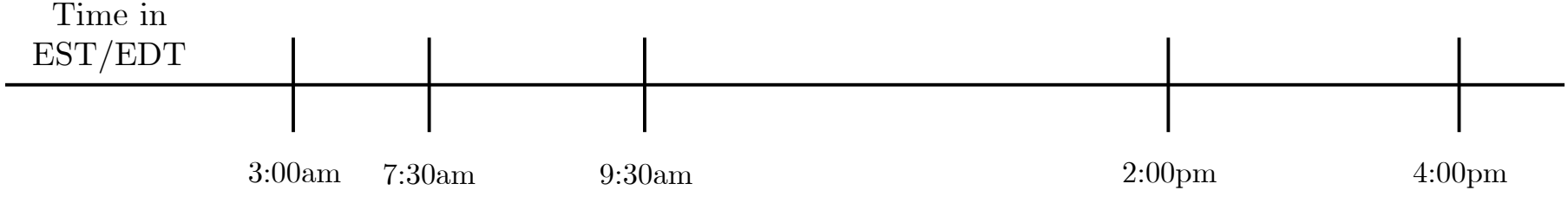
- Divide releases into real activity and price news (Beechey and Wright, 2009)

▸ Figure — Time Series ▸ Table — All News

International Stock Markets

Sample of 27 countries based on trading hours



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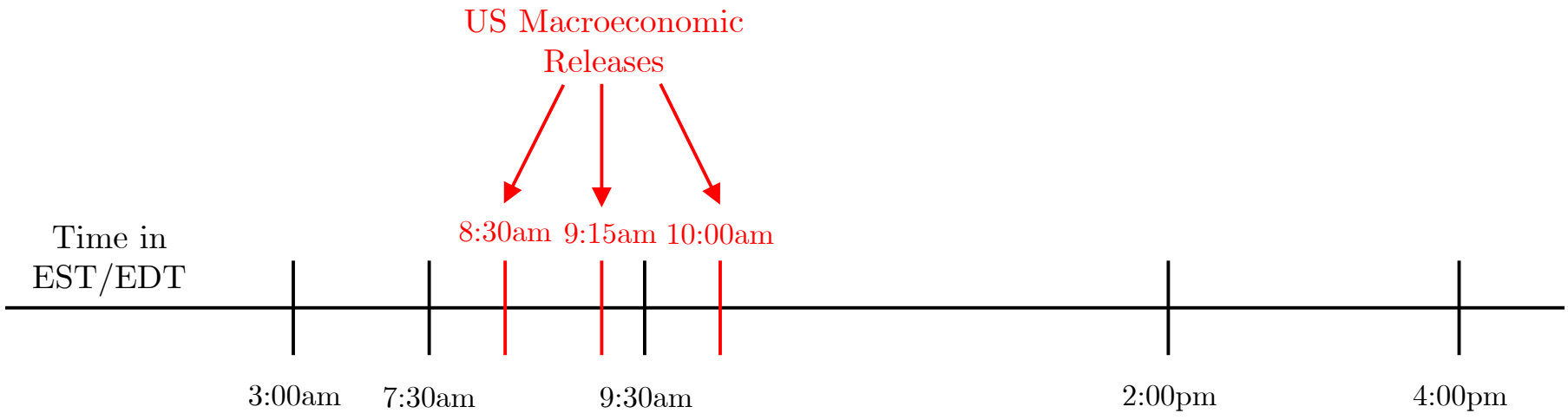

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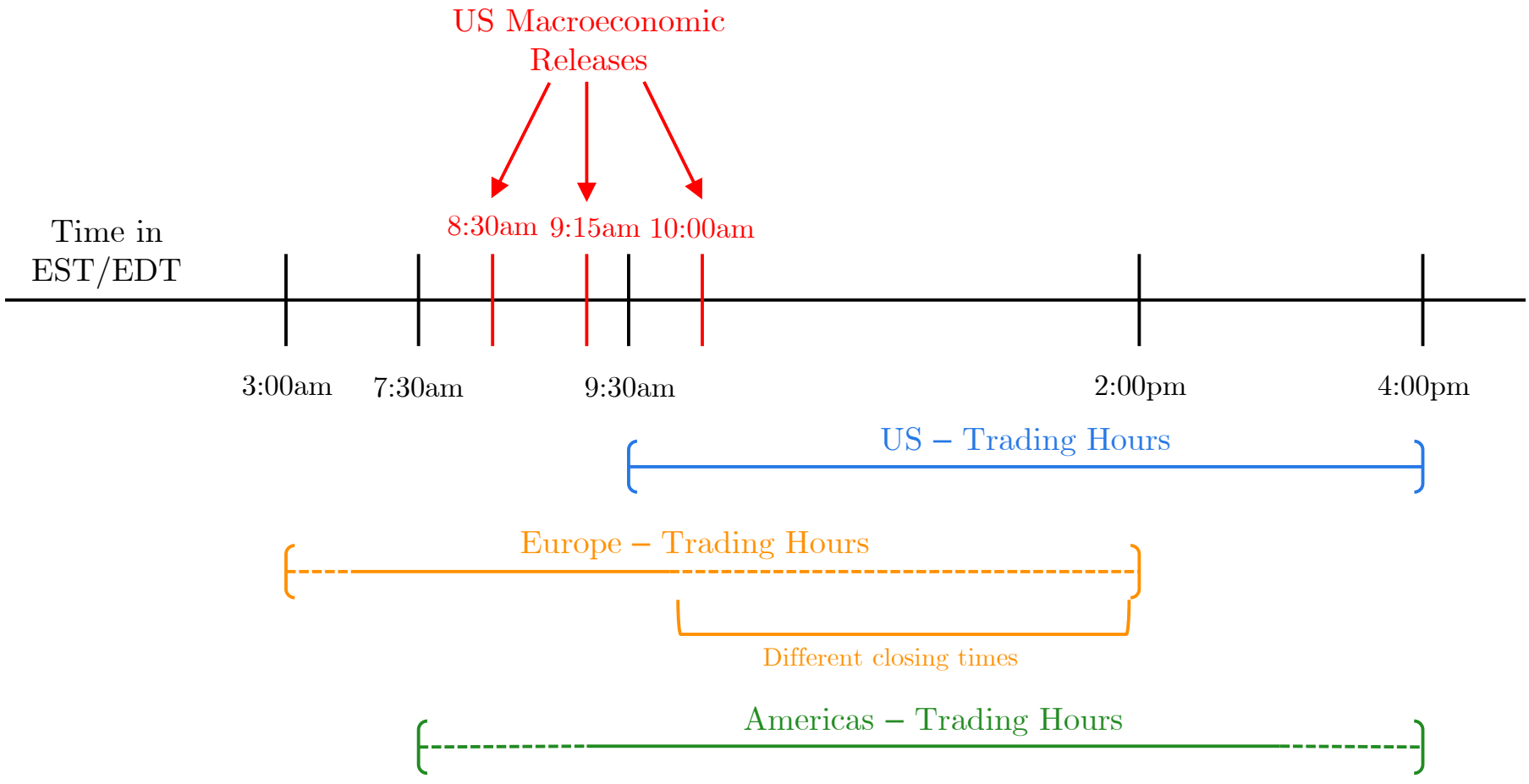

Overview of Intraday Financial Data

Name	Sample	Country	ISO	Name	Sample	Country	ISO
International Stock Indexes							
MERVAL	1996–2019	Argentina	ARG	FTSE/Athex Large Cap	1997–2019	Greece	GRC
ATX	1996–2019	Austria	AUT	BUX	1997–2019	Hungary	HUN
BEL 20	1996–2019	Belgium	BEL	ISEQ	1996–2019	Ireland	IRL
Bovespa	1996–2019	Brazil	BRA	FTSE MIB	1996–2019	Italy	ITA
S&P/TSX	2000–2019	Canada	CAN	S&P/BMV IPC	1996–2019	Mexico	MEX
SMI	1996–2019	Switzerland	CHE	AEX	1996–2019	Netherlands	NLD
IPSA	1996–2019	Chile	CHL	OBX	1996–2019	Norway	NOR
PX	1999–2019	Czech Republic	CZE	WIG20	1997–2019	Poland	POL
DAX	1996–2019	Germany	DEU	PSI-20	1996–2019	Portugal	PRT
OMX Copenhagen 20	2000–2019	Denmark	DNK	MOEX Russia	2001–2019	Russia	RUS
IBEX 35	1996–2019	Spain	ESP	OMX Stockholm 30	1996–2019	Sweden	SWE
OMX Helsinki 25	2001–2019	Finland	FIN	BIST 30	1997–2019	Turkey	TUR
CAC 40	1996–2019	France	FRA	FTSE/JSE Top 40	2002–2019	South Africa	ZAF
FTSE 100	1996–2019	United Kingdom	GBR				
Other Risky Asset Prices							
E-mini S&P 500 Futures	1997–2019						
VIX	1996–2019						
VIX Futures	2011–2019						
VDAX	.V1XI	2005–2019					
VFTSE	.VFTSE	2006–2019					
VCAC	.VCAC	2007–2019					
S&P GSCI Agriculture	2007–2019						
S&P GSCI Energy	2007–2019						
S&P GSCI Industrial Metals	2007–2019						

3. High-frequency Effects of US Macro News on GFC

Pooled Effect

Estimation

$$\Delta q_{i,t} = \alpha_i + \gamma^y s^y_{US,t} + \sum_{k \neq y} \gamma^k s^k_{US,t} + \varepsilon_{i,t}$$

- Event study of announcement y at time t
- $\Delta q_{i,t}$: 30-min log-change of country i's stock market index
- $s^y_{US,t}$: surprise of interest (pooled effect γ^y)
- $s^k_{US,t}$: other surprises about US macro variables
- Standard errors clustered by announcement and country

▸ Figure — Impulse Responses

Pooled Effect — Results

	Capacity Utilization	CB Consumer Confidence	Core CPI	Core PPI	Durable Goods Orders	GDP A
Stock Index (bp)						
News	4.98**	12.61***	-9.06***	-4.58***	5.63***	17.81***
	(2.30)	(2.07)	(1.86)	(1.37)	(1.61)	(3.43)
R^2	0.06	0.13	0.11	0.15	0.10	0.26
Observations	5907	5903	5576	5686	5468	1864
	Initial Jobless Claims $\cdot(-1)$	ISM Mfg Index	New Home Sales	Nonfarm Payrolls	Retail Sales	UM Consumer Sentiment P
Stock Index (bp)						
News	4.86***	11.36***	4.23***	17.24***	10.14***	5.71***
	(0.74)	(2.28)	(1.47)	(3.02)	(2.28)	(1.57)
R^2	0.09	0.12	0.03	0.13	0.15	0.04
Observations	23741	5393	5743	5556	5672	5562

***, **, and * refer to significance at the 1, 5, and 10 percent level.

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- Positive real activity news increases stock prices
- Inflation news (positive price news) decreases stock prices

▸ Table — Relative to US Stocks

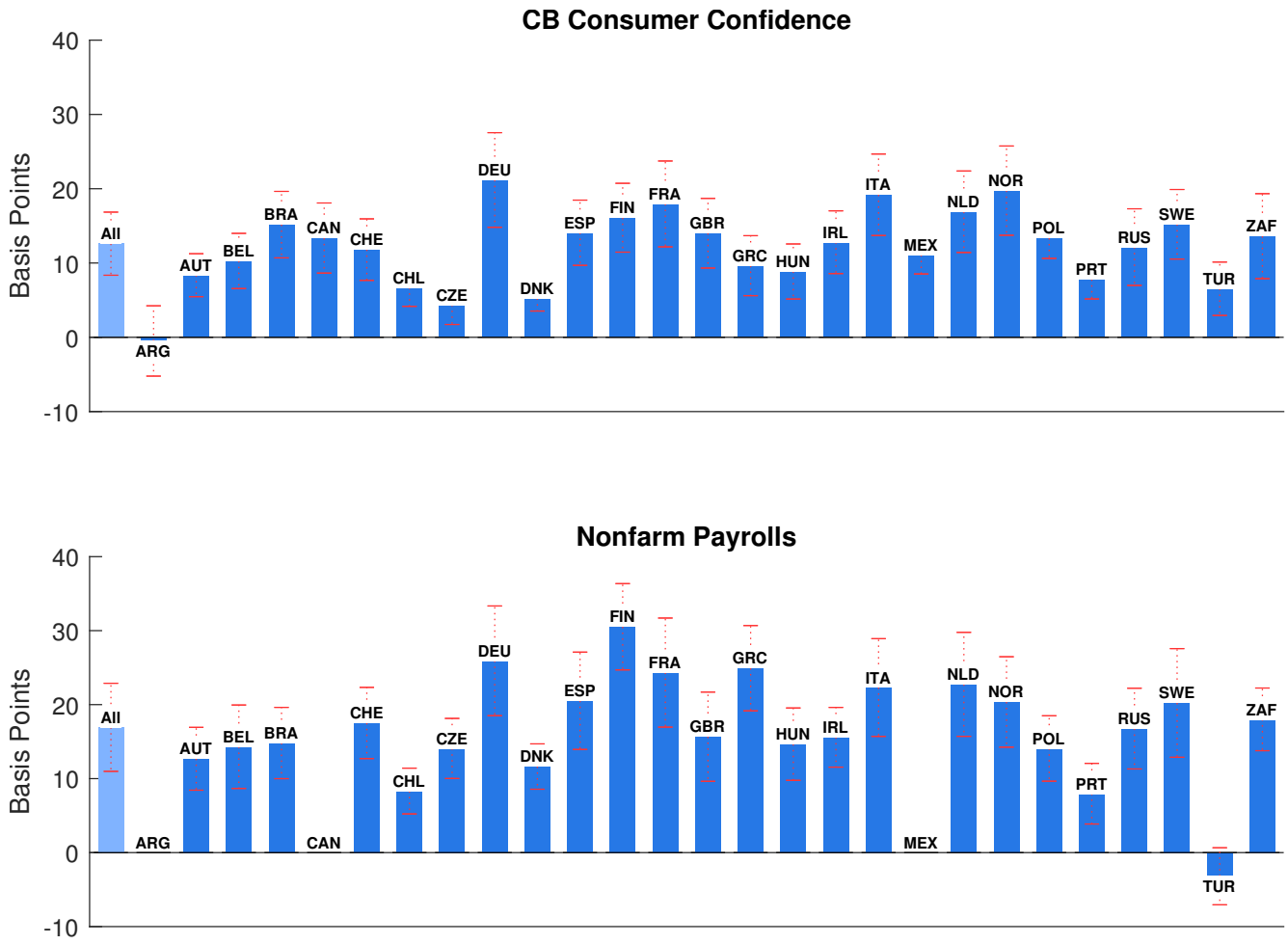
Cross-country Heterogeneity

Estimation

$$\Delta q_{i,t} = \alpha_i + \gamma_i^y s_{US,t}^y + \sum_{k \neq y} \gamma_i^k s_{US,t}^k + \varepsilon_{i,t},$$

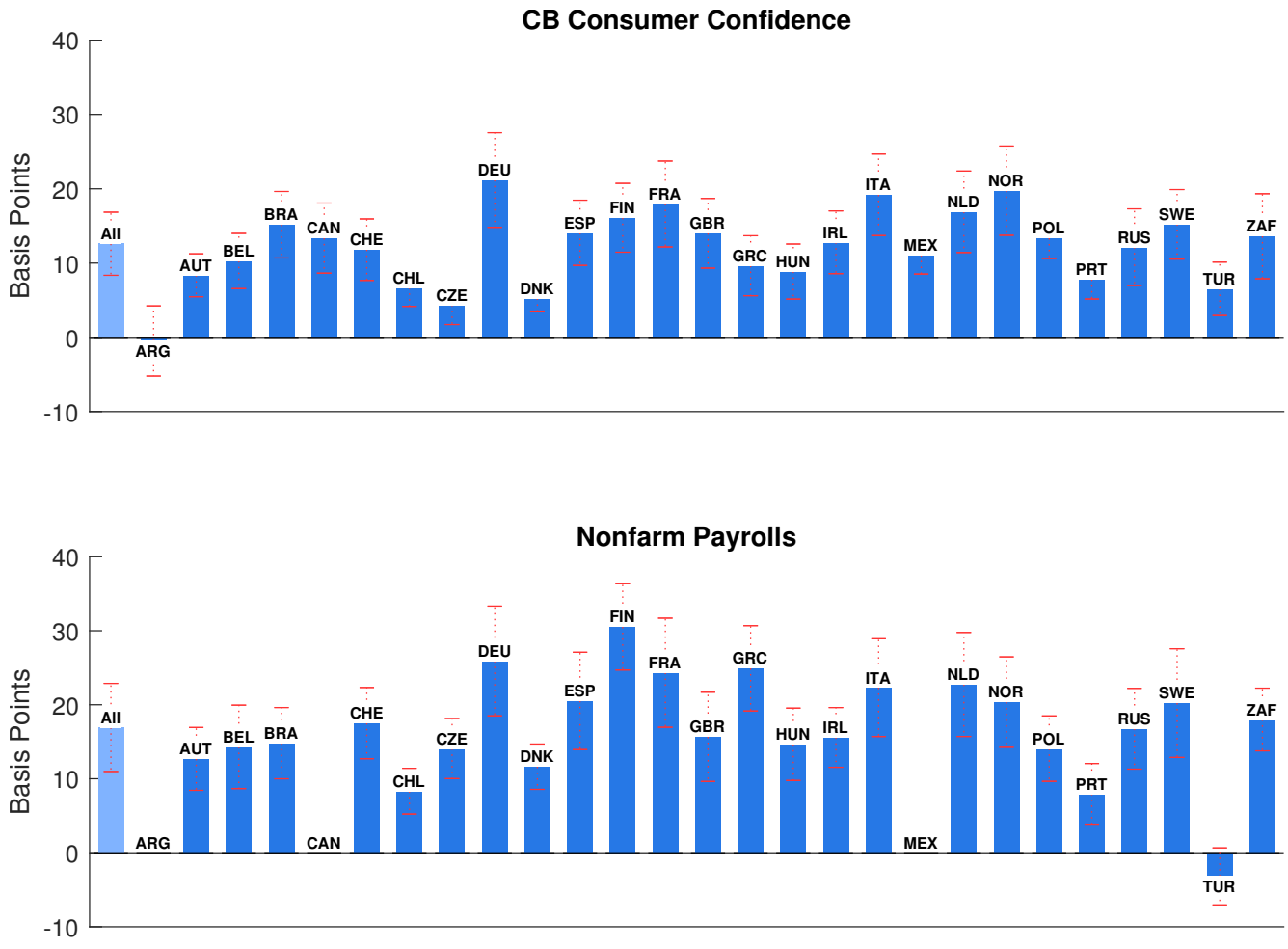
- Country-specific coefficients γ_i^y

Cross-country Heterogeneity — Results I



▸ Figure — More Releases

Cross-country Heterogeneity — Results I

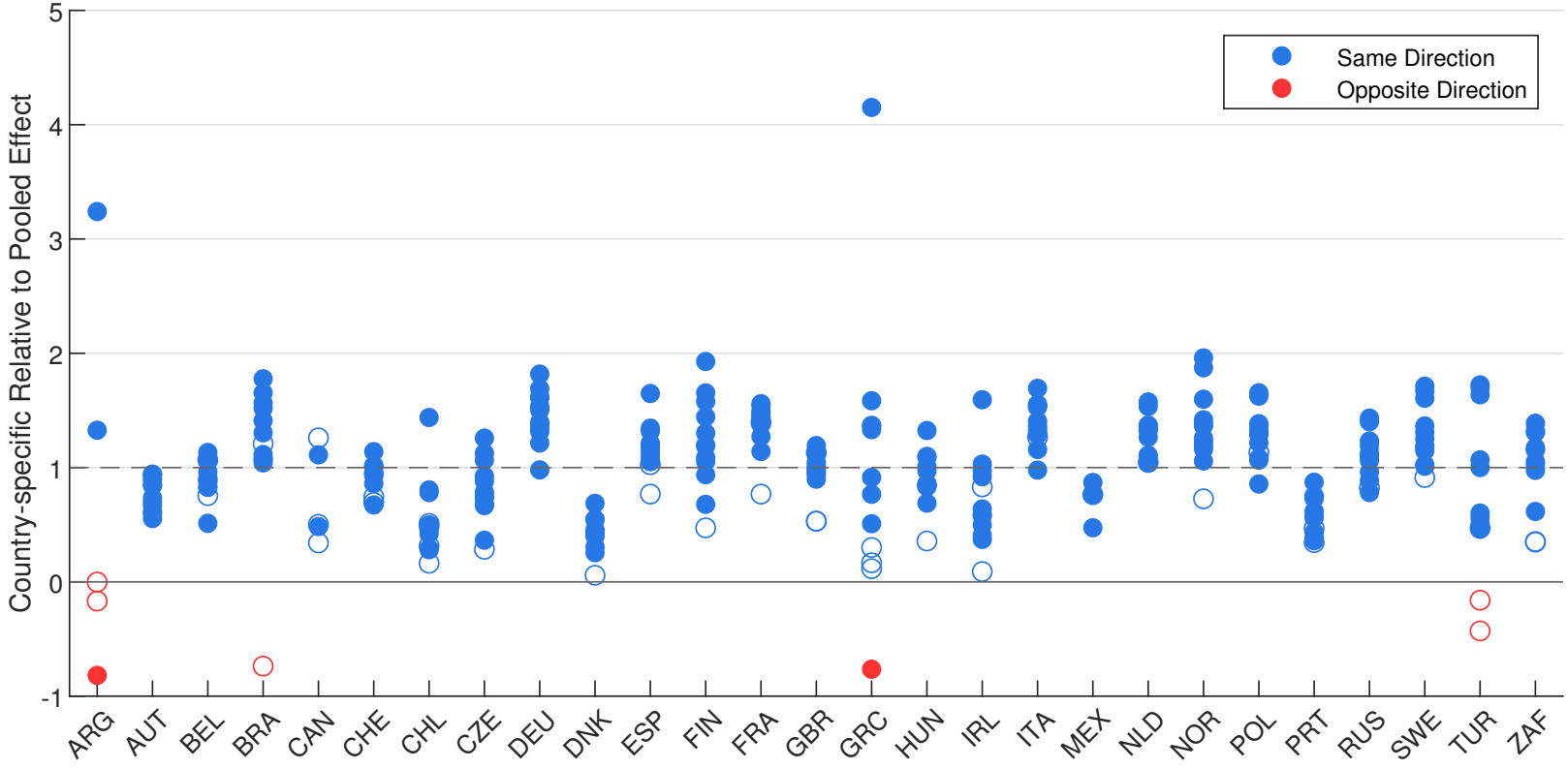


⇒ US News introduce co-movement of stock markets

▸ Figure — More Releases

Cross-country Heterogeneity — Results II

All main releases



Other Risky Asset Prices – VIX

	Capacity Utilization	CB Consumer Confidence	Core CPI	Core PPI	Durable Goods Orders	GDP A
VIX (bp)						
News	-13.75	-64.43***	43.27***	-7.97	-4.42	-51.40***
	(12.75)	(12.79)	(15.92)	(8.63)	(5.61)	(18.27)
R^2	0.05	0.14	0.24	0.43	0.27	0.37
Observations	102	265	99	102	102	34
	Initial Jobless Claims $\cdot(-1)$	ISM Mfg Index	New Home Sales	Nonfarm Payrolls	Retail Sales	UM Consumer Sentiment P
VIX (bp)						
News	-15.40**	-60.07***	-25.08*	-114.08***	-92.44***	-41.66***
	(6.57)	(18.01)	(14.29)	(28.69)	(25.11)	(15.20)
R^2	0.14	0.12	0.05	0.31	0.33	0.05
Observations	438	264	258	101	100	224

***, **, and * refer to significance at the 1, 5, and 10 percent level.

▸ Table — VFTSE ▸ Table — VDAX ▸ Table — VCAC ▸ Table — Commodity Prices

4. Explanatory Power of US Macro News

Overview

Questions

- Can US macro news account for a sizable fraction of variation of international stock markets?
- How does this compare to US monetary policy news?

Overview

Questions

- Can US macro news account for a sizable fraction of variation of international stock markets?
- How does this compare to US monetary policy news?

Empirical Challenge

- Variation of interest at lower frequencies (monthly or quarterly)

$\Rightarrow$ Use method by Altavilla et al. (2017)

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Note

- Explanatory power of headline news is conservative (Gürkaynak et al., 2018)

Methodology (Altavilla et al., 2017)

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1. Daily regression

$$\Delta q_{i,d} = \alpha_i + \sum_k \beta_i^k s_{US,d}^k + \varepsilon_{i,d}.$$

- $\Delta q_{i,d}$: Daily (close-close) of asset price q of country i
- $s_{US,d}^k$: U.S. macro news k on day d

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2. **Calculate fitted values**

$$nix_{i,d}^q := \widehat{\Delta q_{i,d}} \qquad nix_{i,d,h}^q = \sum_{j=0}^{h-1} nix_{i,d-j}^q$$

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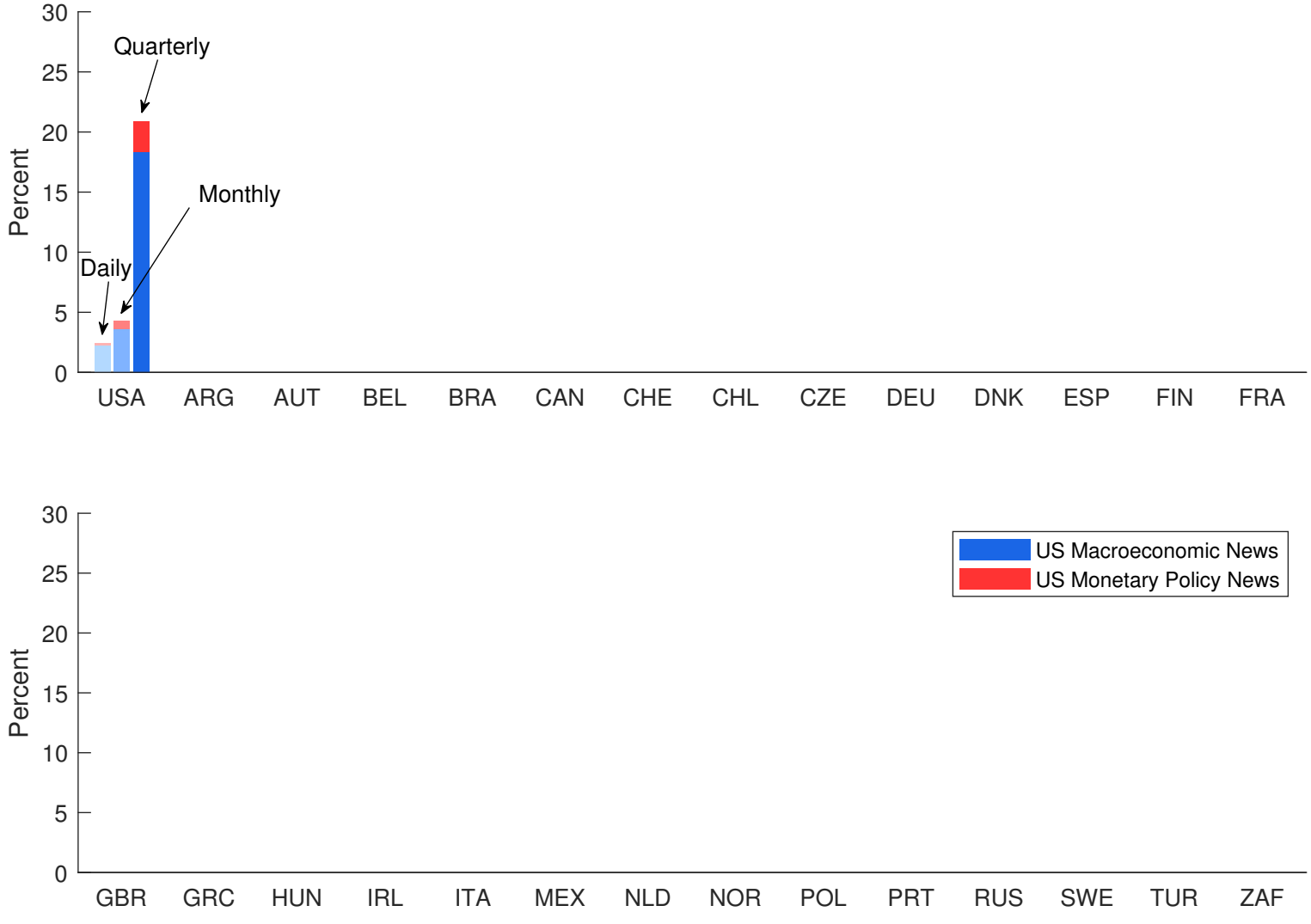
3. **Monthly/Quarterly regression**

$$\Delta_h q_{i,d} = \alpha_{i,h} + \beta_i^{q,h} nix_{i,d,h}^q + \varepsilon_{i,d,h}.$$

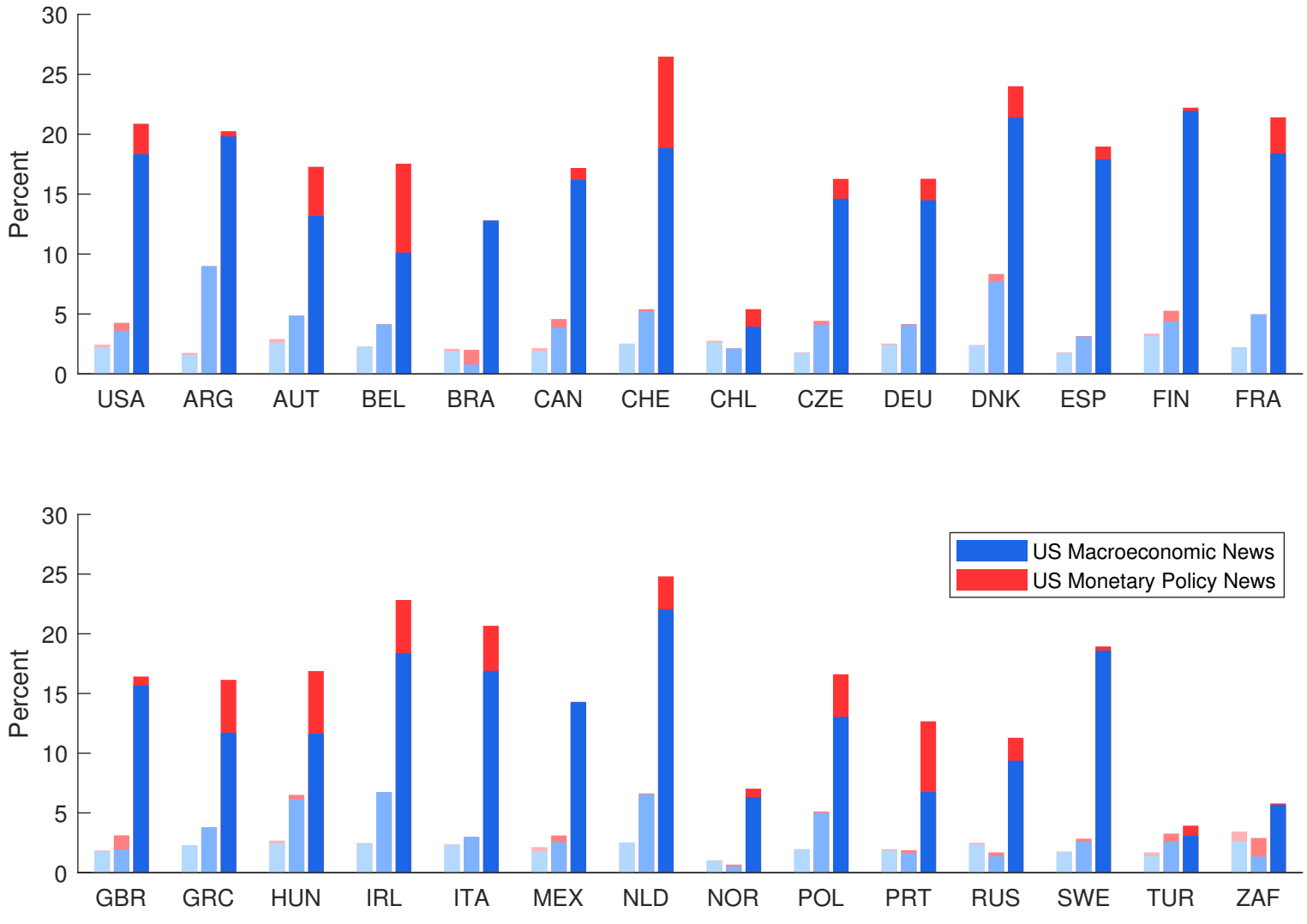
- R-squared: explanatory power of US macro news at horizon h
- Comparison w/ US monetary policy news (Nakamura and Steinsson, 2018)

R-squared: Stock Indexes



▸ Figure — Other Risky Asset Prices

R-squared: Stock Indexes



▸ Figure — Other Risky Asset Prices

5. Inspecting the Mechanism

Common Shocks vs. Transmission

Overview

Question

- Can we disentangle *transmission* from *common shocks*?

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Approach

- If international asset price respond to US macro news due to update of global common state, then US asset prices should respond to foreign news as well

$\Rightarrow$ Study effect of foreign macro news (G7) on US stock market

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Note

- US is *large*
- "Test" sharper for smaller countries

▸ Table — Foreign News

Example: German Macro News

Germany	CPI P	GDP P	GfK Consumer Confidence	IFO Business Climate	Industrial Production	PPI	Retail Sales	ZEW Survey Expectations	Trade Balance	Unemployment Change
S&P 500 (bp)										
News	-0.28	3.54**	0.93	0.99	2.10	1.27	0.58	2.03**	0.16	-0.12
	(0.38)	(1.52)	(0.73)	(1.48)	(1.33)	(0.92)	(0.78)	(0.87)	(0.89)	(0.68)
Observations	196	75	152	245	249	229	222	203	230	254
Effect on Exchange Rate	No	Yes	No	Yes	Yes	No	Yes	Yes	Yes	No

***, **, and * refer to significance at the 1, 5, and 10 percent level.

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2. Do news releases affect US stock market?

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1. Are news releases generally able to move markets?
   $\Rightarrow$ Study effect on US dollar exchange rate
   - Here: they often affect exchange rate (6/10)
2. Do news releases affect US stock market?
   - Here: they sometimes affect S&P 500 (2/10)

Effect of Foreign Macro News on US Stock Market

Canada	Capacity Utilization	Core CPI	GDP	Housing Starts	Intl. Trade	Leading Indicators	Mfg Sales	IPPI	Retail Sales	Unemployment Rate
S&P 500 (bp)										
News	-0.05	1.84**	-1.17	-2.13	0.45	-0.00	-1.01	1.24	0.34	-0.99
	(2.02)	(0.89)	(1.12)	(1.29)	(1.65)	(1.66)	(1.77)	(1.14)	(0.97)	(1.01)
Observations	75	192	79	223	252	165	256	246	255	257
Effect on Exchange Rate	No	Yes	No	Yes	Yes	No	Yes	No	Yes	Yes
France	BoF Industry Sentiment	Consumer Confidence	CPI EU P	GDP P	Industrial Production	Mfg Confidence	PPI	Production Outlook	Trade Balance	Unemployment Rate
S&P 500 (bp)										
News	3.79**	-0.03	0.05	0.20	-0.87	-0.52	2.99	-0.13	-0.27	0.52
	(1.80)	(0.73)	(1.07)	(1.03)	(1.16)	(0.89)	(3.70)	(0.92)	(0.56)	(0.82)
Observations	127	222	58	83	239	206	155	171	236	147
Effect on Exchange Rate	Yes	Yes	Yes	No	No	No	Yes	No	Yes	No
Germany	CPI P	GDP P	GfK Consumer Confidence	IFO Business Climate	Industrial Production	PPI	Retail Sales	ZEW Survey Expectations	Trade Balance	Unemployment Change
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News	-0.28	3.54**	0.93	0.99	2.10	1.27	0.58	2.03**	0.16	-0.12
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Observations	196	75	152	245	249	229	222	203	230	254
Effect on Exchange Rate	No	Yes	No	Yes	Yes	No	Yes	Yes	Yes	No
Italy	Consumer Confidence	CPI P	GDP F	Industrial Production	Industrial Sales	Mfg Confidence	PPI	Trade Balance	Retail Sales	Unemployment Rate
S&P 500 (bp)										
News	-0.42	-0.25	-0.84	0.73	4.24*	-0.67	-0.28	0.68	0.79	-0.51
	(1.07)	(0.65)	(1.61)	(0.90)	(2.37)	(1.28)	(1.52)	(1.51)	(0.83)	(0.94)
Observations	210	234	72	229	62	223	175	75	169	134
Effect on Exchange Rate	No	No	Yes	No	Yes	No	No	No	No	No
Japan	BoJ Mfg Index	BoJ Mfg Outlook	Consumer Confidence	CPI	GDP P	Exports	Industrial Production	PPI	Retail Sales	Unemployment Rate
S&P 500 (bp)										
News	0.93	-1.96	-0.27	-0.23	2.45*	-0.84	0.20	-1.18	0.02	0.17
	(1.15)	(2.41)	(0.51)	(0.39)	(1.37)	(1.04)	(0.45)	(0.84)	(0.68)	(0.45)
Observations	77	56	143	196	69	121	222	184	187	216
Effect on Exchange Rate	Yes	Yes	No	No	No	No	Yes	No	No	Yes
United Kingdom	Core CPI	Core PPI	Exports	GDP A	GfK Consumer Confidence	House Price Index	Industrial Production	Jobless Claims	Retail Sales	Unemployment Rate
S&P 500 (bp)										
News	1.10	-0.46	-0.24	5.10***	-0.01	0.38	-0.33	0.61	1.94**	-1.19
	(0.97)	(0.96)	(2.31)	(1.80)	(0.55)	(0.68)	(0.97)	(0.70)	(0.78)	(0.93)
Observations	164	153	58	79	197	180	249	217	110	203
Effect on Exchange Rate	Yes	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes

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News	3.79**	-0.03	0.05	0.20	-0.87	-0.52	2.99	-0.13	-0.27	0.52
	(1.80)	(0.73)	(1.07)	(1.03)	(1.16)	(0.89)	(3.70)	(0.92)	(0.56)	(0.82)
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Only 8 out of 60 news releases statistically significant at 10 percent level

Boehm & Kroner (2020)

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For comparison: 30 out of 60 with statistically significant effect on exchange rate

Boehm & Kroner (2020)

5. Inspecting the Mechanism

Interest Rate, Risk Premium, & Cash Flow Channel

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Question

- What are the underlying forces of stock price response?

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Stock Price Decomposition (Boyd et al., 2005)

$$\Delta q_{i,t} \approx c_i \left[\left(\underbrace{\Delta g_{i,t}}_{\text{cash flow}} - \underbrace{\Delta ep_{i,t}}_{\text{risk premium}} \right) - \underbrace{\Delta r_{i,t}}_{\text{interest rate}} \right]$$

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- Use 10-year govt. bond yield to estimate $\gamma^{y,r}$
- Stock & bond yield co-movement informative about dominant channel:
  - If cov $(\gamma^{y,q}, \gamma^{y,r}) < 0 \Rightarrow$ interest channel dominant
  - If cov $(\gamma^{y,q}, \gamma^{y,r}) > 0 \Rightarrow$ cash flow and risk premium channel dominant

Stock Return & Bond Yield

	Capacity Utilization	CB Consumer Confidence	Core CPI	Core PPI	Durable Goods Orders	GDP A
Stock Index (bp)						
News	4.98**	12.61***	-9.06***	-4.58***	5.63***	17.81***
	(2.30)	(2.07)	(1.86)	(1.37)	(1.61)	(3.43)
R^2	0.06	0.13	0.11	0.15	0.10	0.26
Observations	5907	5903	5576	5686	5468	1864
10-Year Bond Yield (bp)						
News	0.21***	0.54***	0.66***	0.44***	0.29***	0.88***
	(0.06)	(0.08)	(0.11)	(0.08)	(0.10)	(0.16)
R^2	0.02	0.10	0.05	0.10	0.04	0.19
Observations	4424	4214	4345	4452	4260	1386
	Initial Jobless Claims $\cdot(-1)$	ISM Mfg Index	New Home Sales	Nonfarm Payrolls	Retail Sales	UM Consumer Sentiment P
Stock Index (bp)						
News	4.86***	11.36***	4.23***	17.24***	10.14***	5.71***
	(0.74)	(2.28)	(1.47)	(3.02)	(2.28)	(1.57)
R^2	0.09	0.12	0.03	0.13	0.15	0.04
Observations	23741	5393	5743	5556	5672	5562
10-Year Bond Yield (bp)						
News	0.28***	0.88***	0.27***	1.67***	0.46***	0.28***
	(0.04)	(0.09)	(0.06)	(0.20)	(0.09)	(0.07)
R^2	0.03	0.17	0.04	0.23	0.15	0.03
Observations	18753	3956	4128	4378	4431	3985

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▸ Table — Time-varying

Stock Return & Bond Yield

	Capacity Utilization	CB Consumer Confidence	Core CPI	Core PPI	Durable Goods Orders	GDP A
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News	4.98**	12.61***	-9.06***	-4.58***	5.63***	17.81***
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Observations	5907	5903	5576	5686	5468	1864
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Implications for Role of US Monetary Policy

Can US monetary policy *reactions* explain findings?

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$\Rightarrow$ US monetary policy cannot explain foreign stock price responses

4. Inspecting the Mechanism

Role of Financial Integration

Overview

Motivation

- Literature on GFC emphasis models with financial frictions
    - International credit channel (Bernanke and Gertler, 1989; Bernanke et al., 1999)
    - Risk-taking channel (Adrian and Shin, 2014; Bruno and Shin, 2015)

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Question

- What role does country's financial integration play for its stock market's sensitivity to US news?

Role of Financial Integration — Data

Financial Integration Measure

- Data source: Lane and Milesi-Ferretti (2007, 2017)
- Financial integration of country i in year τ:

$$\text{finInt}_{i,\tau} = \frac{\text{FA}_{i,\tau} + \text{FL}_{i,\tau}}{\text{GDP}_{i,\tau}}$$

- $\text{FA}_{i,\tau}$ ($\text{FL}_{i,\tau}$) stock of foreign assets (liabilities)

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- Components:
  1. Portfolio investment
  2. Foreign direct investment
  3. Other investments (e.g. loans, deposits, and trade credits)
  4. Financial derivatives
  5. Reserve assets

Role of Financial Integration — Estimation

$$\Delta q_{i,t} = \alpha_i + \gamma^y s^y_{US,t} + \delta^y \left(s^y_{US,t} \times \text{finInt}_{i,t-} \right) + \sum_{k \neq y} \gamma^k s^k_{US,t} + \sum_{k \neq y} \delta^k \left(s^k_{US,t} \times \text{finInt}_{i,t-} \right) + \zeta \, \text{finInt}_{i,t-} + \varepsilon_{i,t},$$

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- δ^y: differential response of country with one std. dev. greater-than-average degree of financial integration

Role of Financial Integration — Results

	Capacity Utilization	CB Consumer Confidence	Core CPI	Core PPI	Durable Goods Orders	GDP A
Stock Index (bp)						
News	5.82**	13.64***	-9.28***	-5.13***	6.22***	18.45***
	(2.38)	(2.31)	(2.07)	(1.52)	(1.68)	(3.62)
Fin. Integration × News	1.43	1.35	2.85***	2.19***	0.08	-0.42
	(1.11)	(1.06)	(0.92)	(0.76)	(0.86)	(1.99)
R^2	0.07	0.15	0.11	0.18	0.11	0.27
Observations	4037	3998	3767	3824	3676	1253
	Initial Jobless Claims $\cdot(-1)$	ISM Mfg Index	New Home Sales	Nonfarm Payrolls	Retail Sales	UM Consumer Sentiment P
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	(0.85)	(2.47)	(1.51)	(3.45)	(2.42)	(1.73)
Fin. Integration × News	1.15**	4.41**	0.97	14.63***	3.72***	0.49
	(0.51)	(1.66)	(0.90)	(2.48)	(1.09)	(0.75)
R^2	0.10	0.14	0.04	0.20	0.18	0.05
Observations	15941	3673	3888	3725	3846	3788

***, **, and * refer to significance at the 1, 5, and 10 percent level.

▸ Table — Trade Int. & Industry Sim.

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5. Inspecting the Mechanism

Role of US Dollar Exchange Rate

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Question

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$\Rightarrow$ Prediction: foreign stock price $\uparrow$ + foreign currency rel. to US dollar $\uparrow$

Stock Return & US Dollar Exchange Rate

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Bernanke (2017): Existence of GFC $\nRightarrow$ Financial spillovers

- This paper: US economy $\Rightarrow$ GFC $\Rightarrow$ other countries

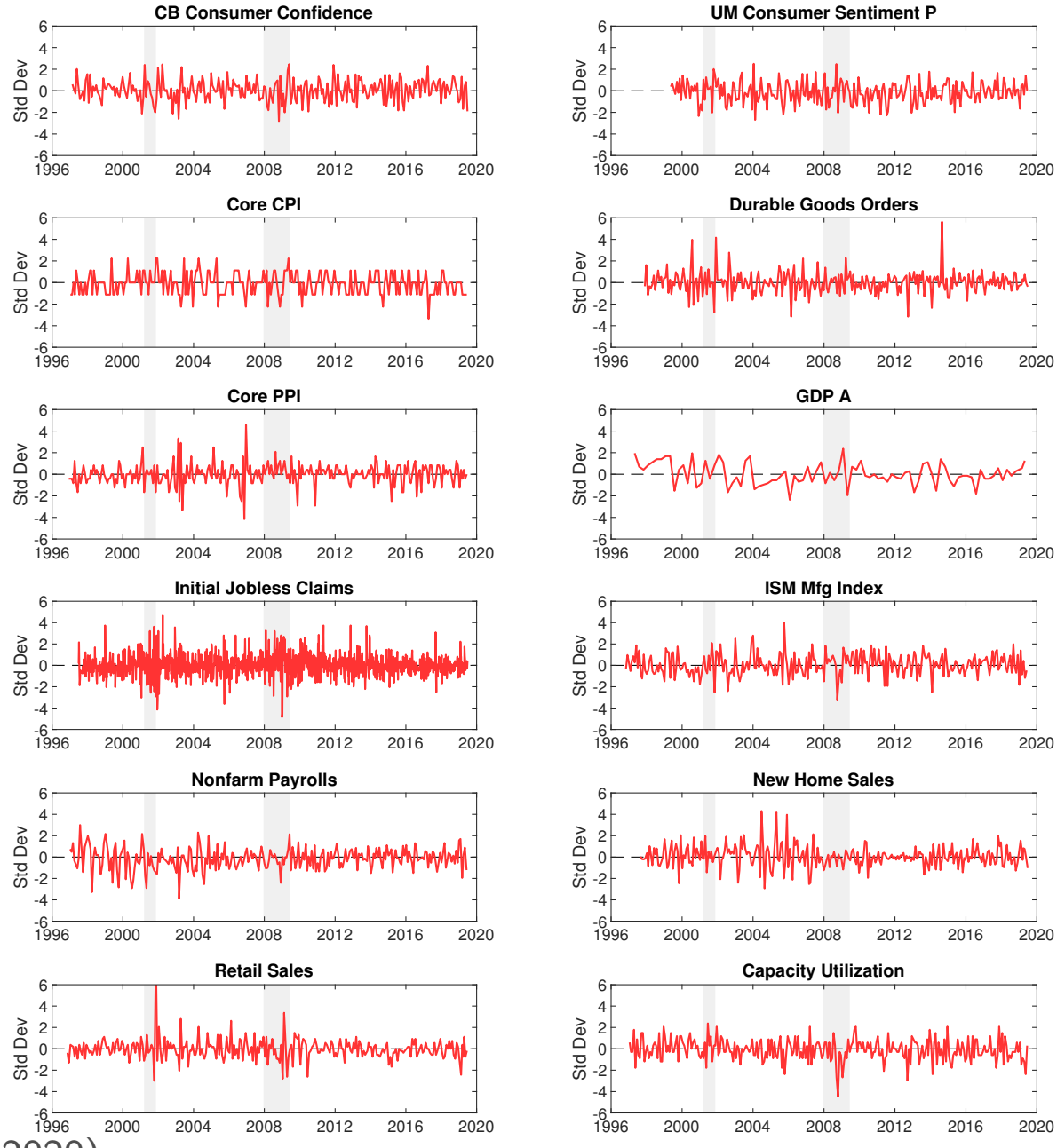
Overview of All US Macroeconomic News

Return

Name	Frequency	Category	Observations	Name	Frequency	Category	Observations
ADP Employment	Monthly	Real Activity	154	Import Price Index	Monthly	Price	247
Average Hourly Earnings	Monthly	Price	252	Initial Jobless Claims	Weekly	Real Activity	1140
Chicago Fed Nat Activity Index	Monthly	Real Activity	101	Continuing Claims	Weekly	Real Activity	839
Capital Goods Orders	Monthly	Real Activity	106	Industrial Production	Monthly	Real Activity	271
Capital Goods Shipments	Monthly	Real Activity	89	CB Leading Economic Index	Monthly	Real Activity	266
ISM Chicago Index	Monthly	Real Activity	269	Business Inventories	Monthly	Real Activity	263
Consumer Credit	Monthly	Real Activity	271	Wholesale Inventories	Monthly	Real Activity	264
Construction Spending	Monthly	Real Activity	246	ISM Non-Mfg Index	Monthly	Real Activity	245
CB Consumer Confidence	Monthly	Real Activity	268	ISM Mfg Index	Monthly	Real Activity	271
UM Consumer Sentiment F	Monthly	Real Activity	242	ISM Prices Paid	Monthly	Price	228
UM Consumer Sentiment P	Monthly	Real Activity	241	Private Payrolls	Monthly	Real Activity	110
Unit Labor Costs F	Quarterly	Price	79	Nonfarm Payrolls	Monthly	Real Activity	268
Unit Labor Costs P	Quarterly	Price	79	Mfg Payrolls	Monthly	Real Activity	246
Capacity Utilization	Monthly	Real Activity	268	Housing Starts	Monthly	Real Activity	254
CPI	Monthly	Price	271	Building Permits	Monthly	Real Activity	202
Core CPI	Monthly	Price	269	Philly Fed Business Outlook	Monthly	Real Activity	267
Dallas Fed Mfg Index	Monthly	Real Activity	125	Core PCE Price Index	Monthly	Price	168
Durable Goods Orders	Monthly	Real Activity	260	Personal Consumption Expenditure	Monthly	Real Activity	267
Durables Ex Transportation	Monthly	Real Activity	211	Personal Income	Monthly	Real Activity	271
Employment Cost Index	Quarterly	Price	89	Nonfarm Productivity F	Quarterly	Real Activity	84
NY Fed Mfg Index	Monthly	Real Activity	200	Nonfarm Productivity P	Quarterly	Real Activity	85
Existing Home Sales	Monthly	Real Activity	172	Richmond Fed Mfg Index	Monthly	Real Activity	164
Government Budget Balance	Monthly	Real Activity	270	Retail Sales	Monthly	Real Activity	270
PPI	Monthly	Price	257	Retail Sales Ex Auto	Monthly	Real Activity	264
Core PPI	Monthly	Price	269	Total Vehicle Sales	Monthly	Real Activity	82
Net Long-term TIC Flows	Monthly	Real Activity	117	NFIB Small Business Optimism	Monthly	Real Activity	112
GDP A	Quarterly	Real Activity	89	Factory Orders	Monthly	Real Activity	271
GDP S	Quarterly	Real Activity	88	Current Account Balance	Quarterly	Real Activity	85
GDP T	Quarterly	Real Activity	89	NFIB Small Business Optimism	Monthly	Real Activity	112
GDP Price Index A	Quarterly	Price	85	New Home Sales	Monthly	Real Activity	261
GDP Price Index S	Quarterly	Price	85	Pending Home Sales	Monthly	Real Activity	170
GDP Price Index T	Quarterly	Price	84	Trade Balance	Monthly	Real Activity	271
FHFA House Price Index	Monthly	Price	133	Unemployment Rate	Monthly	Real Activity	267

News Surprises — Time Series

Return



Pooled Effect — Relative to US Stocks

Return

Left-hand variable: $\Delta q_{US,t} - \Delta q_{i,t}$

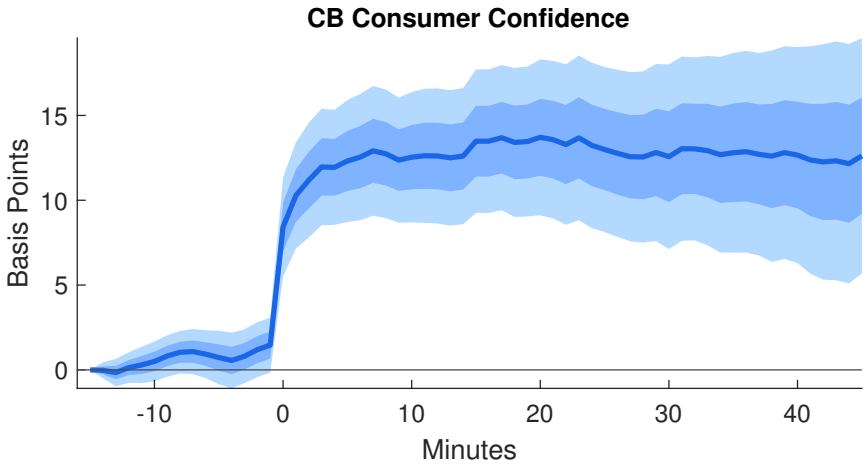
	Capacity Utilization	CB Consumer Confidence	Core CPI	Core PPI	Durable Goods Orders	GDP A
Stock Index Diff. (bp)						
News	-0.47	3.44**	-4.78***	-0.89	-0.97	-1.05
	(1.13)	(1.37)	(1.23)	(0.84)	(0.87)	(2.02)
R^2	0.01	0.04	0.05	0.02	0.03	0.05
Observations	5389	5815	5434	5526	5468	1824

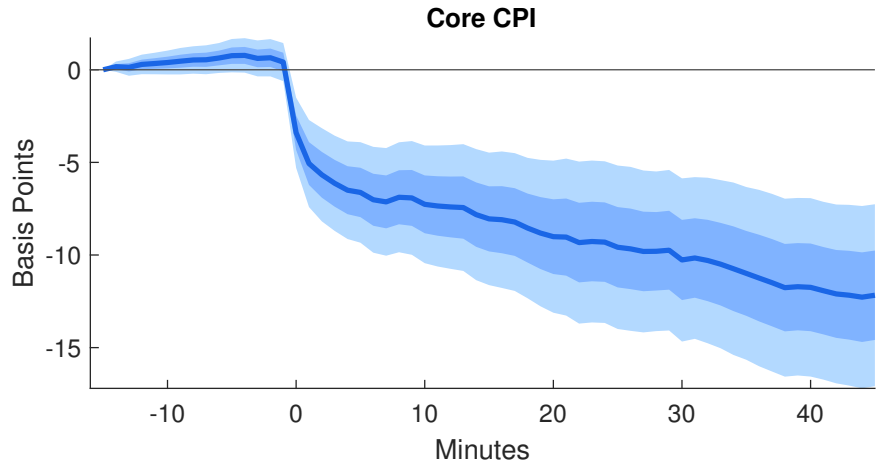
	Initial Jobless Claims $\cdot(-1)$	ISM Mfg Index	New Home Sales	Nonfarm Payrolls	Retail Sales	UM Consumer Sentiment P
Stock Index Diff. (bp)						
News	0.64	3.93**	-0.82	3.00	-1.60	-1.73
	(0.45)	(1.89)	(0.95)	(2.28)	(1.05)	(1.17)
R^2	0.01	0.06	0.01	0.03	0.03	0.01
Observations	23529	5277	5728	5446	5479	4924

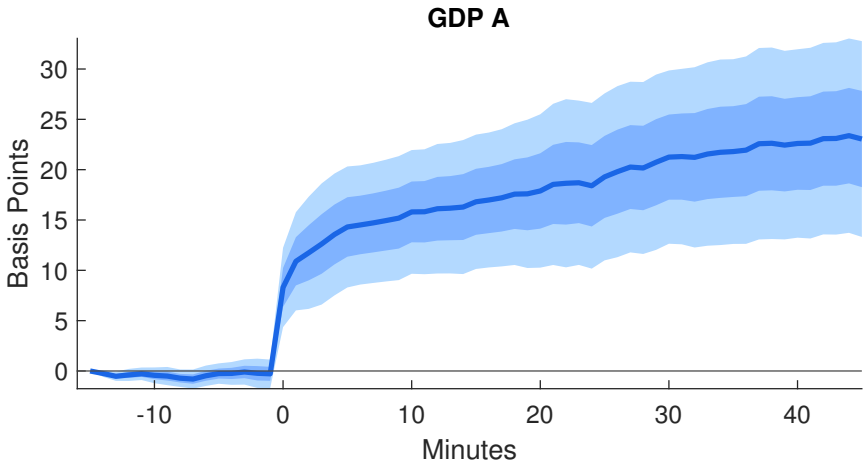
***, **, and * refer to significance at the 1, 5, and 10 percent level.

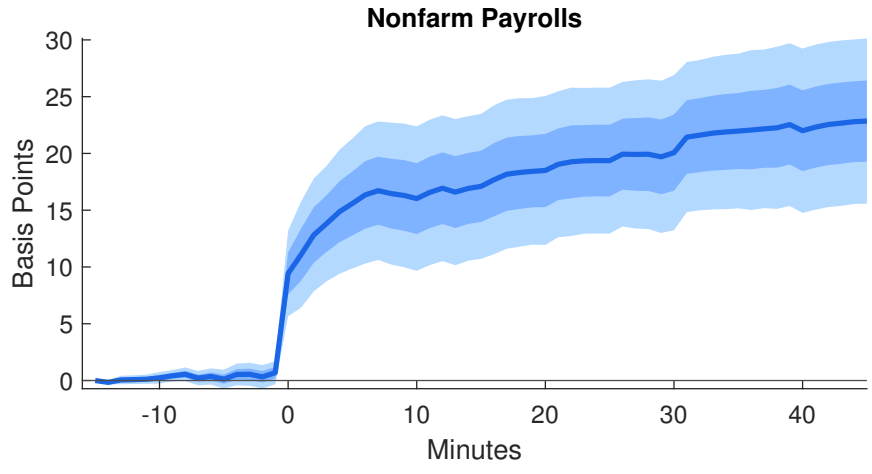
Impulse Response of Intl. Stock Markets

Return



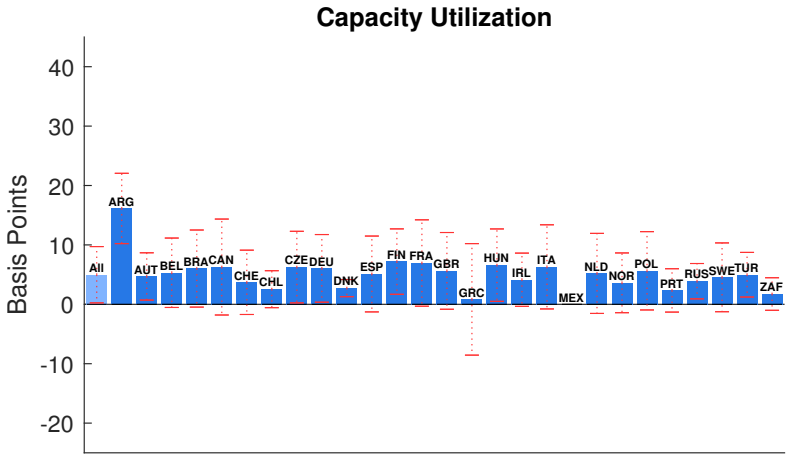


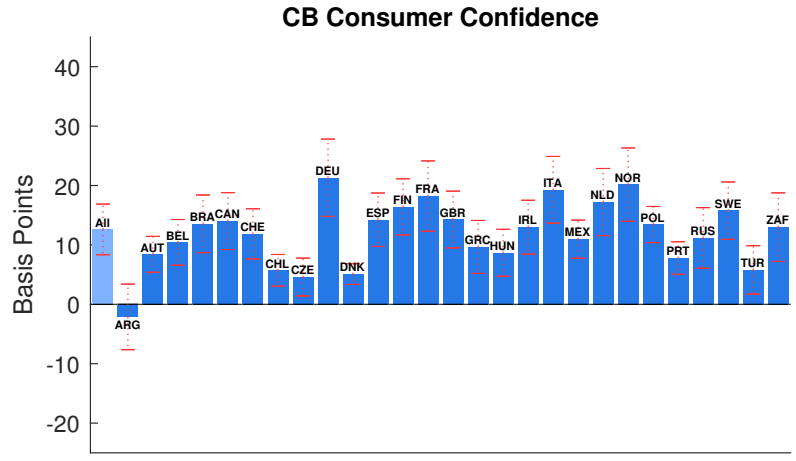


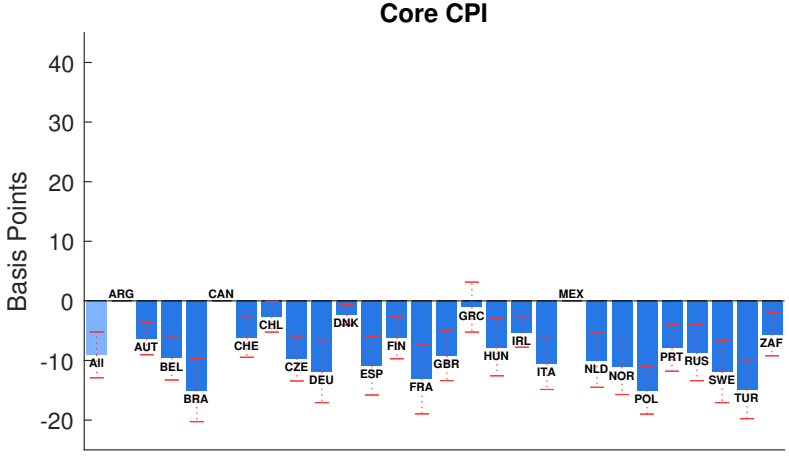


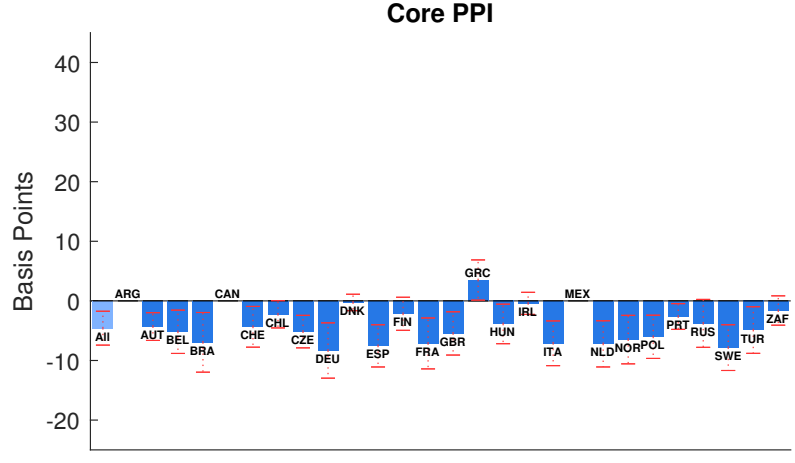
Cross-country Heterogeneity

Return





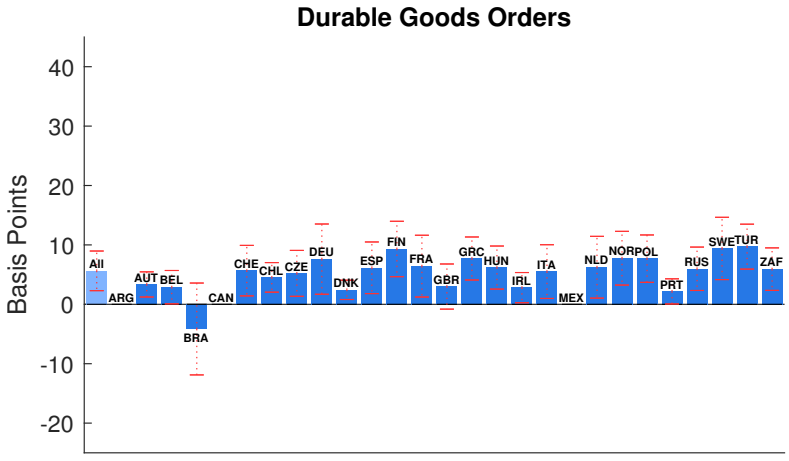


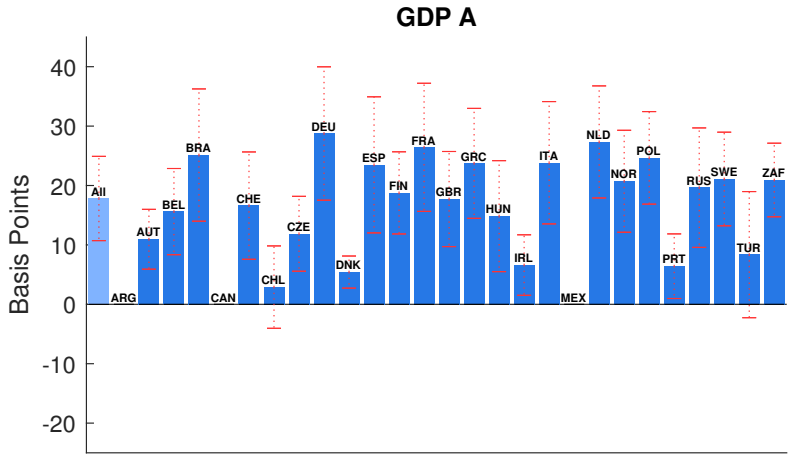


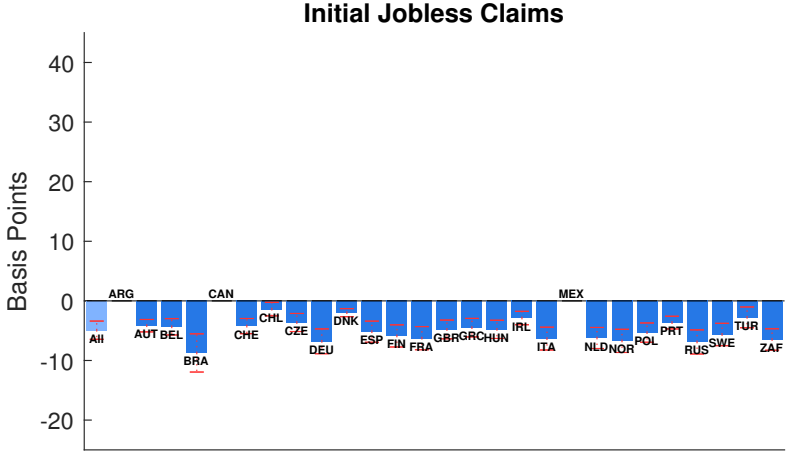
▸ Figure — More Releases

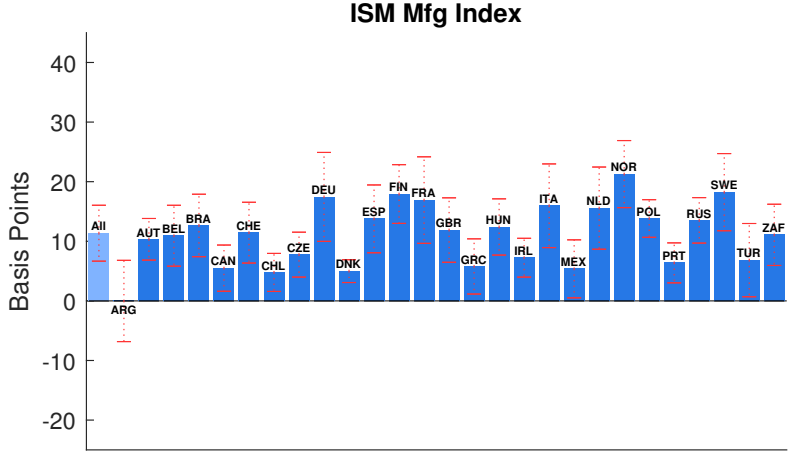
Cross-country Heterogeneity

Return





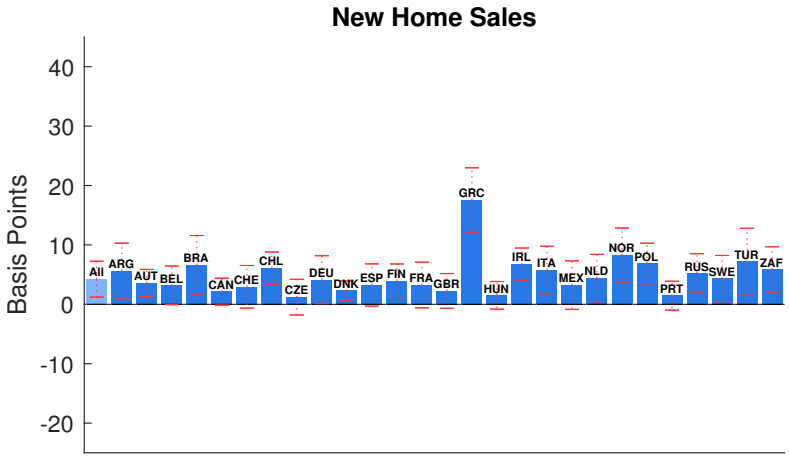


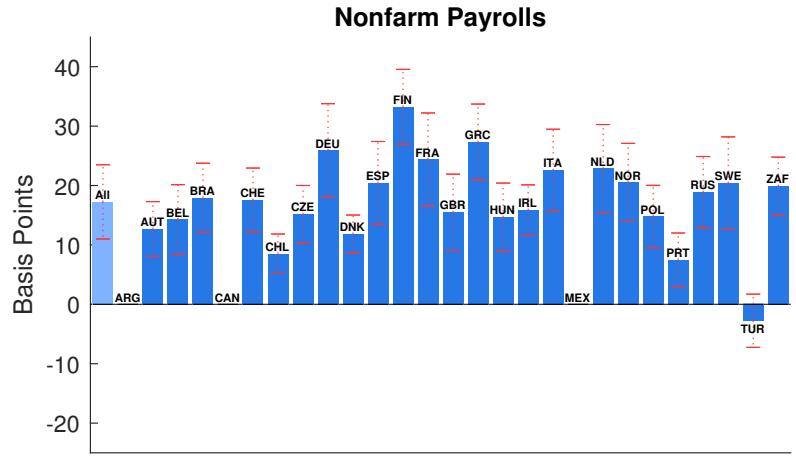


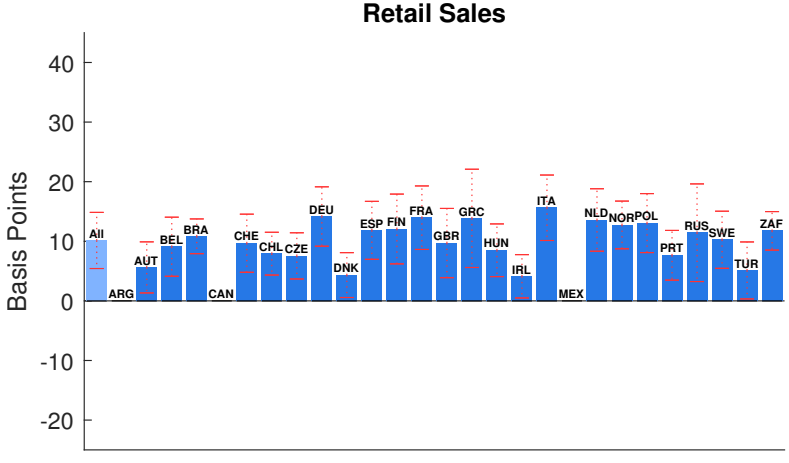
▸ Figure — More Releases

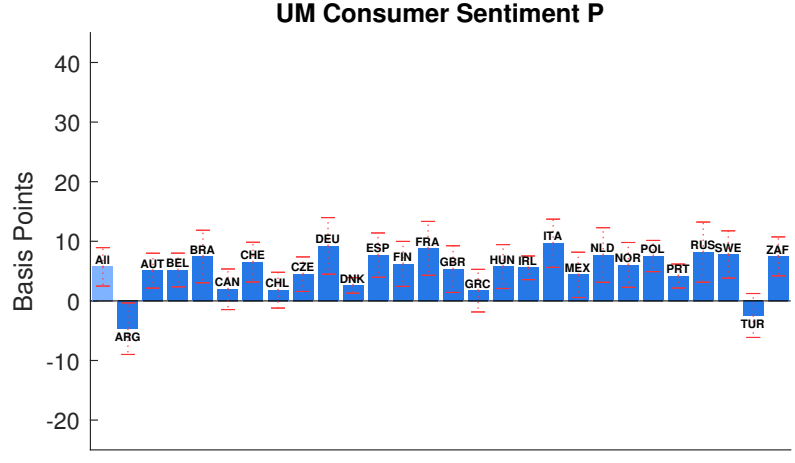
Cross-country Heterogeneity

Return









Other Risky Asset Prices – VFTSE

Return

	Capacity Utilization	CB Consumer Confidence	Core CPI	Core PPI	Durable Goods Orders	GDP A
VFTSE (bp)						
News	-23.78	-45.38**	5.43	-32.92	2.34	-106.86***
	(18.83)	(17.66)	(17.02)	(30.64)	(13.28)	(28.71)
R^2	0.06	0.15	0.05	0.09	0.18	0.47
Observations	128	121	124	124	126	41
	Initial Jobless Claims $\cdot(-1)$	ISM Mfg Index	New Home Sales	Nonfarm Payrolls	Retail Sales	UM Consumer Sentiment P
VFTSE (bp)						
News	-29.29***	-79.79***	-29.42	-60.91	-49.78	-71.74***
	(8.21)	(23.86)	(21.50)	(54.95)	(39.88)	(17.53)
R^2	0.13	0.19	0.10	0.09	0.10	0.11
Observations	541	112	122	121	122	124

***, **, and * refer to significance at the 1, 5, and 10 percent level.

Other Risky Asset Prices – VDAX

Return

	Capacity Utilization	CB Consumer Confidence	Core CPI	Core PPI	Durable Goods Orders	GDP A
VDAX (bp)						
News	-17.92***	-40.91***	41.96***	24.31**	-26.76***	-91.69***
	(6.79)	(9.12)	(12.36)	(11.05)	(9.90)	(15.47)
R^2	0.08	0.15	0.15	0.28	0.16	0.36
Observations	169	166	169	169	167	57
	Initial Jobless Claims $\cdot(-1)$	ISM Mfg Index	New Home Sales	Nonfarm Payrolls	Retail Sales	UM Consumer Sentiment P
VDAX (bp)						
News	-23.79***	-76.22***	-35.19**	-137.69***	-59.07***	-46.77***
	(4.58)	(17.21)	(15.05)	(18.92)	(9.60)	(12.56)
R^2	0.13	0.21	0.14	0.30	0.28	0.10
Observations	727	156	167	165	169	170

***, **, and * refer to significance at the 1, 5, and 10 percent level.

Other Risky Asset Prices – VCAC

Return

	Capacity Utilization	CB Consumer Confidence	Core CPI	Core PPI	Durable Goods Orders	GDP A
VCAC (bp)						
News	-30.06*	-35.08**	46.06**	5.64	-14.79	-53.59*
	(17.84)	(17.41)	(22.58)	(19.93)	(11.34)	(29.73)
R^2	0.07	0.07	0.18	0.23	0.13	0.16
Observations	140	140	140	140	139	47
	Initial Jobless Claims $\cdot(-1)$	ISM Mfg Index	New Home Sales	Nonfarm Payrolls	Retail Sales	UM Consumer Sentiment P
VCAC (bp)						
News	-41.45***	-91.43***	-41.75	-148.16***	-67.26***	-22.92
	(12.16)	(22.26)	(27.56)	(27.25)	(23.16)	(26.88)
R^2	0.09	0.18	0.11	0.31	0.16	0.02
Observations	604	130	137	137	140	141

***, **, and * refer to significance at the 1, 5, and 10 percent level.

Other Risky Asset Prices – Commodity Prices

Return

	Capacity Utilization	CB Consumer Confidence	Core CPI	Core PPI	Durable Goods Orders	GDP A
Commodity Factor (bp)						
News	0.65	18.24***	-3.16	-1.34	6.78*	24.12**
	(4.00)	(5.12)	(3.97)	(3.29)	(3.63)	(11.19)
R^2	0.11	0.15	0.15	0.13	0.18	0.31
Observations	146	146	145	146	145	48
	Initial Jobless Claims $\cdot(-1)$	ISM Mfg Index	New Home Sales	Nonfarm Payrolls	Retail Sales	UM Consumer Sentiment P
Commodity Factor (bp)						
News	7.44***	15.96***	12.36**	40.00***	17.52***	-0.25
	(1.76)	(4.48)	(5.09)	(8.81)	(3.93)	(4.23)
R^2	0.11	0.23	0.12	0.26	0.25	0.01
Observations	632	145	145	142	145	146

***, **, and * refer to significance at the 1, 5, and 10 percent level.

▸ Details — Commodity Factor

Construction of Commodity Factor

Return

First Factor of Principal Component Analysis

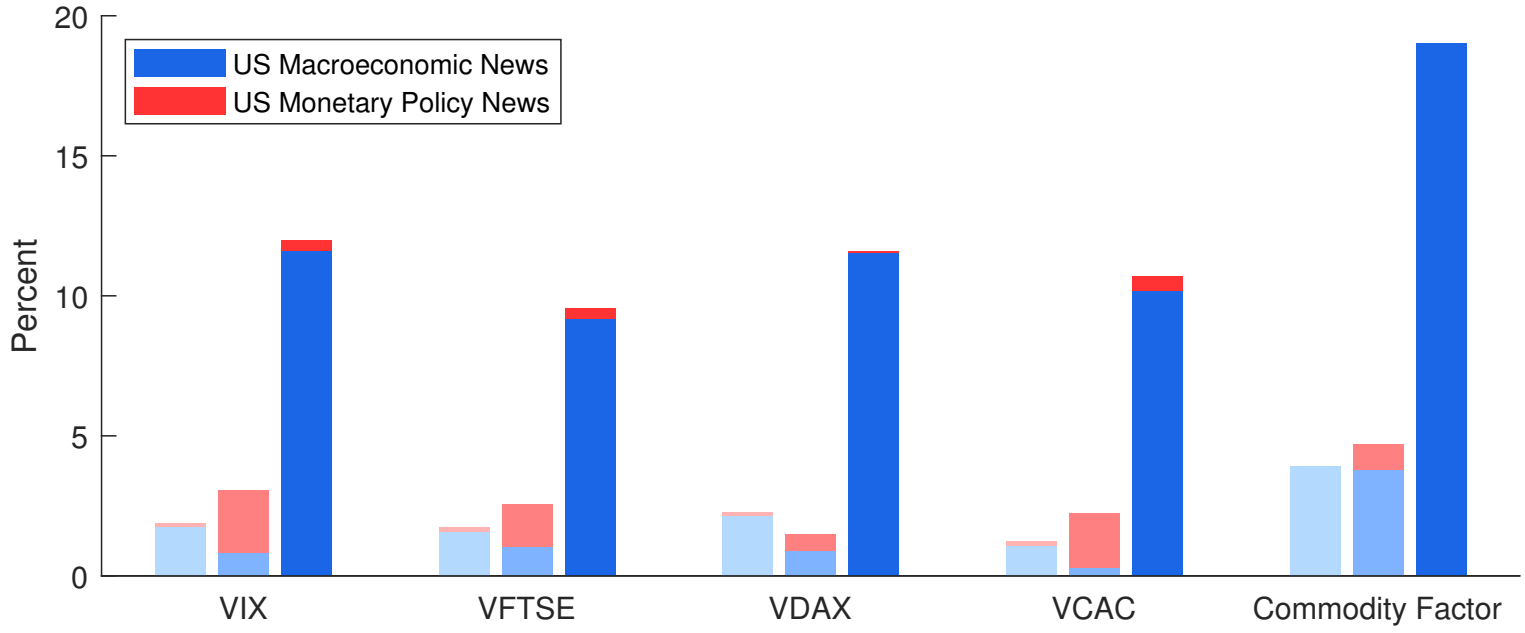
	Loadings		Explained Variance		
	Factor 1	Factor 2	Factor 1	Factor 2	Total
Energy	0.65	-0.27	0.71	0.06	0.77
Industrial Metals	0.65	-0.28	0.70	0.07	0.77
Agriculture	0.39	0.92	0.25	0.75	1.00
Total			0.55	0.29	0.85

Composition of Underlying Commodity Indexes

Energy		Industrial Metals		Agriculture	
WTI Crude Oil	0.41	LME Aluminium	0.35	Chicago Wheat	0.18
Brent Crude Oil	0.30	LME Cooper	0.41	Kansas Wheat	0.08
RBOB Gasoline	0.07	LME Lead	0.06	Corn	0.31
Heating Oil	0.07	LME Nickel	0.08	Soybeans	0.20
Gasoil	0.10	LME Zinc	0.11	Cotton	0.08
Natural Gas	0.05			Sugar	0.10
				Coffee	0.04
				Cocoa	0.02

R-squared: Volatility Indexes & Commodity Prices

Return



Overview of All Foreign Macroeconomic News

Return

	Frequency	Observations		Frequency	Observations
Canada			*Italy*		
Capacity Utilization	Quarterly	76	Consumer Confidence	Monthly	213
Core CPI	Monthly	198	CPI P	Monthly	249
GDP	Quarterly	79	GDP F	Quarterly	74
Housing Starts	Monthly	226	Industrial Production	Monthly	241
Intl. Trade	Monthly	266	Industrial Sales	Quarterly	63
Leading Indicators	Monthly	171	Mfg Confidence	Monthly	225
Mfg Sales	Monthly	265	PPI	Monthly	190
Industrial Product Price Index (IPPI)	Monthly	248	Trade Balance	Quarterly	76
Retail Sales	Monthly	258	Retail Sales	Monthly	171
Unemployment Rate	Monthly	267	Unemployment Rate	Monthly	139
France			*Japan*		
BoF Industry Sentiment	Monthly	127	BoJ (Tankan) Mfg Index	Quarterly	83
Consumer Confidence	Monthly	230	BoJ (Tankan) Mfg Outlook	Quarterly	57
CPI EU P	Monthly	215	Consumer Confidence	Monthly	146
GDP P	Quarterly	87	CPI	Monthly	211
Industrial Production	Monthly	264	GDP P	Quarterly	71
Mfg Confidence	Monthly	210	Exports	Monthly	122
PPI	Monthly	161	Industrial Production	Monthly	231
Production Outlook	Monthly	179	PPI	Monthly	187
Trade Balance	Monthly	263	Retail Sales	Monthly	191
Unemployment Rate	Monthly	171	Unemployment (Jobless) Rate	Monthly	231
Germany			*United Kingdom*		
CPI P	Monthly	239	Core CPI	Monthly	164
GDP P	Quarterly	87	Core PPI (Output)	Monthly	153
GfK Consumer Confidence	Monthly	152	Exports	Quarterly	58
IFO Business Climate	Monthly	263	GDP A	Quarterly	80
Industrial Production	Monthly	264	GfK Consumer Confidence	Monthly	197
PPI	Monthly	266	House Price Index	Monthly	180
Retail Sales	Monthly	248	Industrial Production	Monthly	268
ZEW Survey Expectations	Monthly	206	Jobless Claims	Monthly	240
Trade Balance	Monthly	265	Retail Sales	Monthly	110
Unemployment Change	Monthly	267	(ILO) Unemployment Rate	Monthly	203

Stock Return & Bond Yield — Time-varying

Return

	Capacity Utilization	CB Consumer Confidence	Core CPI	Core PPI	Durable Goods Orders	GDP A
Stock Index (bp)						
News	1.08	7.25***	-11.64***	-6.32***	2.44*	12.73***
	(1.05)	(1.99)	(2.15)	(1.75)	(1.29)	(3.63)
News - Recession	7.64*	9.53***	6.39**	3.92*	8.35***	13.45**
	(4.04)	(3.04)	(2.88)	(2.10)	(2.87)	(4.92)
R^2	0.08	0.17	0.14	0.18	0.13	0.32
Observations	5809	5783	5576	5686	5468	1864
10-Year Bond Yield (bp)						
News	0.22***	0.42***	0.81***	0.52***	0.21**	0.80***
	(0.07)	(0.11)	(0.13)	(0.08)	(0.09)	(0.17)
News - Recession	-0.02	0.21*	-0.38***	-0.21*	0.25	0.17
	(0.08)	(0.10)	(0.13)	(0.10)	(0.20)	(0.24)
R^2	0.03	0.10	0.06	0.12	0.04	0.21
Observations	4424	4214	4345	4452	4260	1386

	Initial Jobless Claims $\cdot(-1)$	ISM Mfg Index	New Home Sales	Nonfarm Payrolls	Retail Sales	UM Consumer Sentiment P
Stock Index (bp)						
News	4.42***	7.88***	4.39**	13.43***	9.24***	6.97***
	(0.71)	(2.61)	(1.68)	(3.67)	(2.32)	(1.56)
News - Recession	0.68	8.75**	-0.20	8.89*	1.14	-2.89
	(1.08)	(3.50)	(2.35)	(4.58)	(3.69)	(2.90)
R^2	0.11	0.17	0.03	0.15	0.17	0.05
Observations	23741	5274	5630	5556	5672	5465
10-Year Bond Yield (bp)						
News	0.28***	0.81***	0.32***	1.83***	0.65***	0.24***
	(0.05)	(0.10)	(0.07)	(0.26)	(0.12)	(0.07)
News - Recession	0.01	0.16	-0.13	-0.41	-0.27**	0.08
	(0.07)	(0.13)	(0.11)	(0.27)	(0.13)	(0.11)
R^2	0.03	0.18	0.04	0.24	0.16	0.03
Observations	18753	3956	4128	4378	4431	3985

***, **, and * refer to significance at the 1, 5, and 10 percent level.

Effect of US News on 10-Year Treasury Yield

Return

	Capacity Utilization	CB Consumer Confidence	Core CPI	Core PPI	Durable Goods Orders	GDP A
10-Year Treasury Yields (bp)						
News	0.45***	1.14***	1.40***	1.03***	0.43	1.57***
	(0.11)	(0.17)	(0.23)	(0.16)	(0.26)	(0.34)
R^2	0.13	0.37	0.25	0.37	0.24	0.30
Observations	264	191	258	268	183	88
	Initial Jobless Claims $\cdot(-1)$	ISM Mfg Index	New Home Sales	Nonfarm Payrolls	Retail Sales	UM Consumer Sentiment P
10-Year Treasury Yields (bp)						
News	0.59***	2.09***	0.73***	4.12***	1.31***	0.60***
	(0.07)	(0.18)	(0.13)	(0.42)	(0.34)	(0.12)
R^2	0.22	0.46	0.29	0.46	0.34	0.13
Observations	1001	267	186	268	266	237

***, **, and * refer to significance at the 1, 5, and 10 percent level.

Daily, Monthly, and Quarterly R-Squared for Stock Indexes

Return

Role of Financial Linkages — Trade Int. and Industry Dissim.

Return

	Capacity Utilization	CB Consumer Confidence	Core CPI	Core PPI	Durable Goods Orders	GDP A
Stock Index (bp)						
News	6.52**	15.49***	-9.22***	-5.02***	6.42***	19.88***
	(2.52)	(2.35)	(2.19)	(1.52)	(1.81)	(3.65)
Fin. Integration						
× News	1.45	0.35	3.64*	3.24**	0.79	-2.36
	(1.32)	(1.55)	(1.91)	(1.40)	(1.52)	(2.86)
Trade Integration						
× News	-0.61	-2.69***	0.66	0.16	0.01	-3.36**
	(0.37)	(0.93)	(0.46)	(0.50)	(0.36)	(1.26)
Industry Dissimilarity						
× News	0.80	-1.41	1.87	2.17*	1.29	-1.90
	(1.06)	(1.36)	(1.65)	(1.17)	(1.37)	(2.62)
R^2	0.09	0.20	0.13	0.21	0.14	0.35
Observations	3449	3325	3272	3314	3262	1095

	Initial Jobless Claims $\cdot(-1)$	ISM Mfg Index	New Home Sales	Nonfarm Payrolls	Retail Sales	UM Consumer Sentiment P
Stock Index (bp)						
News	5.36***	13.64***	4.82***	23.72***	11.82***	6.78***
	(0.89)	(2.56)	(1.52)	(3.61)	(2.49)	(1.73)
Fin. Integration						
× News	2.10***	4.77**	2.60*	16.52***	5.14***	-0.14
	(0.68)	(2.16)	(1.40)	(3.13)	(1.33)	(1.24)
Trade Integration						
× News	-0.98*	-2.53*	-2.28**	-3.92	-2.06*	-1.03*
	(0.52)	(1.30)	(0.95)	(2.33)	(1.07)	(0.57)
Industry Dissimilarity						
× News	0.97	2.19	2.37**	5.54**	1.67	-0.48
	(0.68)	(1.61)	(0.93)	(2.16)	(1.00)	(1.15)
R^2	0.13	0.19	0.07	0.24	0.22	0.06
Observations	14045	3044	3268	3240	3329	3270

***, **, and * refer to significance at the 1, 5, and 10 percent level.