

What Triggers Stock Market Jumps

Scott R. Baker (Kellogg, Northwestern)

Nick Bloom (Stanford)

Steven J. Davis (Booth, Chicago)

Marco Sammon (Kellogg, Northwestern)

Norges Bank, March 2020



The University of Chicago Booth School of Business



Rising fears that uncertainty is slowing global growth

The image is a collage of four distinct visual elements arranged in a grid-like fashion. The top-left element is a screenshot of a news website's sidebar, showing a search bar, navigation links for 'HOME', 'WORLD', and 'BUSINESS', and a 'Topics' dropdown menu. It also displays a stock market tick for 'DJIA Futures' at 27752, up 0.39%. The top-right element is a screenshot of The New York Times homepage featuring a large headline about the British economy shrinking. The bottom-left element is a screenshot of a BBC News article titled 'IMF warns world of financial crisis', dated October 15, 2019. The bottom-right element is a photograph of a city street, likely London, showing modern skyscrapers like the Cheesegrater and the Gherkin next to traditional neoclassical buildings.

The Economist

ECONOMY Global E Paris-based org

Containers are stacke

By Paul Hannon
Updated Nov. 21, 2019 9:28 am ET

DJIA Futures 27752 0.39% ▲

Topics ▾ Current e

BBC NEWS

Home | Video | World | U

Business | Market Data

IMF warns world of financial crisis

15 October 2019 | Brexit

The New York Times

British Economy Shrinks, a Sign of Economic Uncertainty

A photograph of a city street, likely London, showing modern skyscrapers like the Cheesegrater and the Gherkin next to traditional neoclassical buildings. A man in a suit is walking in the foreground on the right.

Working with Bloom & Davis to measure economic policy uncertainty

THE
QUARTERLY JOURNAL
OF ECONOMICS

Vol. 131 November 2016 Issue 4

MEASURING ECONOMIC POLICY UNCERTAINTY*

SCOTT R. BAKER
NICHOLAS BLOOM
STEVEN J. DAVIS

We develop a new index of economic policy uncertainty (EPU) based on newspaper coverage frequency. Several types of evidence—including human readings of 12,000 newspaper articles—indicate that our index proxies for movements in policy-related economic uncertainty. Our U.S. index spikes near tight presidential elections, Gulf Wars I and II, the 9/11 attacks, the failure of Lehman Brothers, the 2011 debt ceiling dispute, and other major battles over fiscal policy. Using firm-level data, we find that policy uncertainty is associated with greater stock price volatility and reduced investment and employment in policy-sensitive sectors like defense, health care, finance, and infrastructure construction. At the macro level, innovations in policy uncertainty foreshadow declines in investment, output, and employment in the United States and, in a panel vector autoregressive setting, for 12 major economies. Extending our U.S. index back to 1900, EPU rose dramatically in the 1930s (from late 1931) and has drifted upward since the 1960s. *JEL Codes:* D80, E22, E66, G18, L50.

*We thank Adam Jorring, Kyle Kost, Abdulla Al-Kuwari, Sophie Biffar, Jörn Boehnke, Vladimir Dashkeyev, Olga Deriy, Eddie Dinh, Yuto Ezure, Robin Gong, Sonam Jindal, Ruben Kim, Sylvia Klosin, Jessica Koh, Peter Lajewski, David Nebyu, Rebecca Sachs, Ippie Shibata, Corinne Stephenson, Naoko Takeda, Melissa Tan, Sophie Wang, and Peter Xu for research assistance and the National Science Foundation, MacArthur Foundation, Sloan Foundation, Becker Friedman Institute, Initiative on Global Markets, and Stigler Center at the University of Chicago for financial support. We thank Ruedi Bachmann, Sanjai Bhagat, Vincent Bignon, Yongsung Chang, Vladimir Dashkeyev, Jesus Fernandez-Villaverde, Laurent Ferrara, Luis Garicano, Matt Gentzkow, Yuriy Gorodnichenko, Kevin Hassett, Takeo Hoshi, Greg Ip, Anil Kashyap, Patrick Kehoe, John Makin, Johannes Pfeifer, Meijun Qian, Itay Saporta, John Shoven, Sam Schulhofer-Wohl, Jesse Shapiro, Erik Sims, Stephen Terry, Cynthia Wu, and many seminar and conference audiences for comments. We also thank the referees and editors, Robert Barro and Larry Katz, for comments and suggestions.

© The Author(s) 2016. Published by Oxford University Press on behalf of President and Fellows of Harvard College. All rights reserved. For Permissions, please email: journals.permissions@oup.com

The Quarterly Journal of Economics (2016), 1593–1636. doi:10.1093/qje/qjw024.
Advance Access publication on July 11, 2016.

1593

 **ECONOMIC POLICY UNCERTAINTY**

Home Methodology Media Research & Applications About Us

EPU Indices

All Country-Level Data

Global	USA
Australia	Brazil
Canada	Chile
China New	Colombia
Europe	France
Germany	Greece
Hong Kong	India
Ireland	Italy
Japan	South Korea
Mexico	Netherlands
Russia	Singapore
Spain New	Sweden
UK	

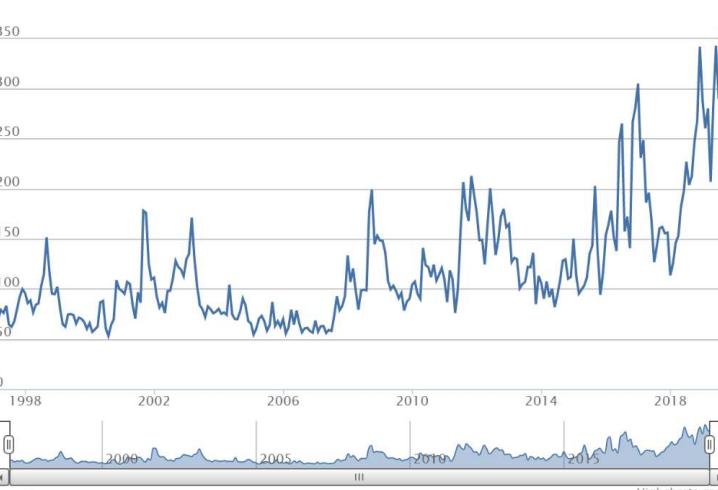
Economic Policy Uncertainty Index

We develop indices of economic policy uncertainty for countries around the world.

Monthly Global Economic Policy Uncertainty Index

Zoom [1m](#) [3m](#) [6m](#) [1y](#) [7y](#) [All](#)

From: To:



Highcharts.com

Categorical EPU

[US Categorical EPU Indices](#)

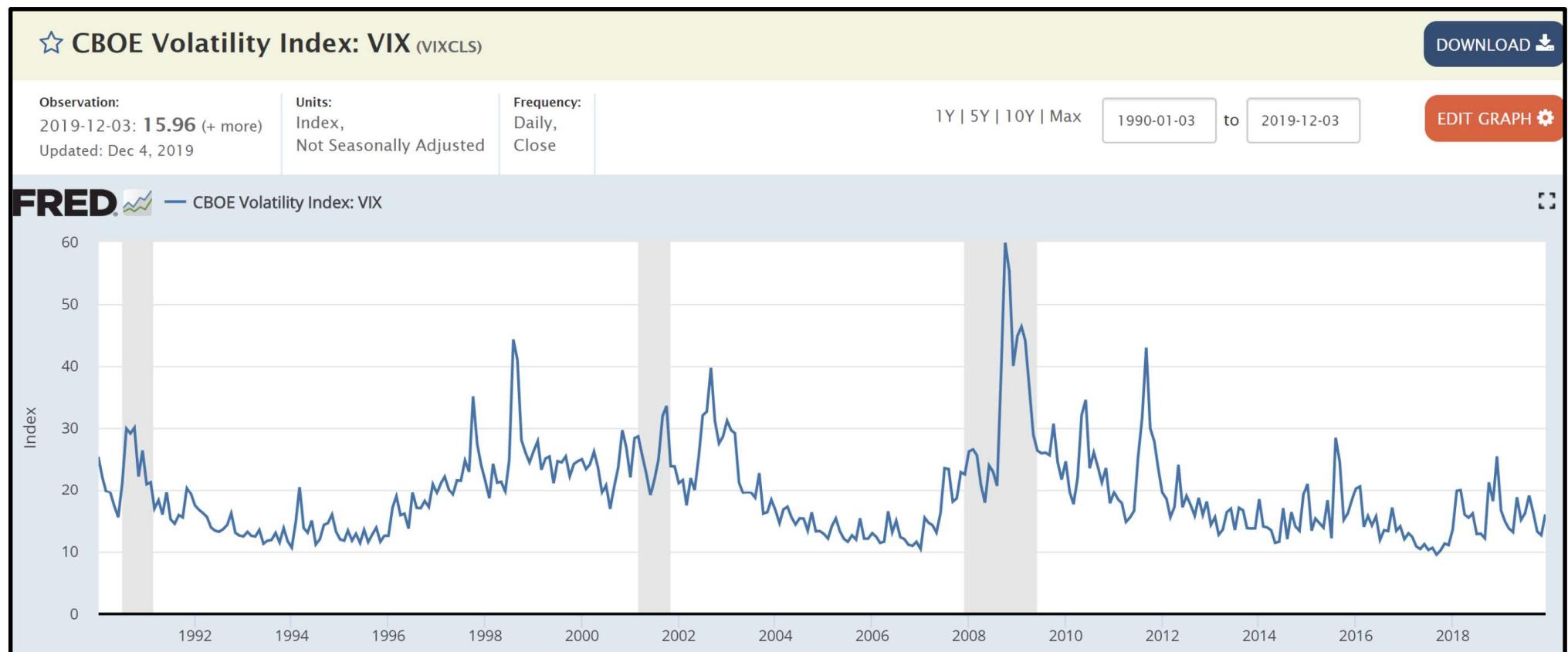
[Monetary Policy Uncertainty](#)

[Greece Categorical EPU](#)

New: [Call for papers: Uncertainty and Economic Activity - Global Perspectives](#)

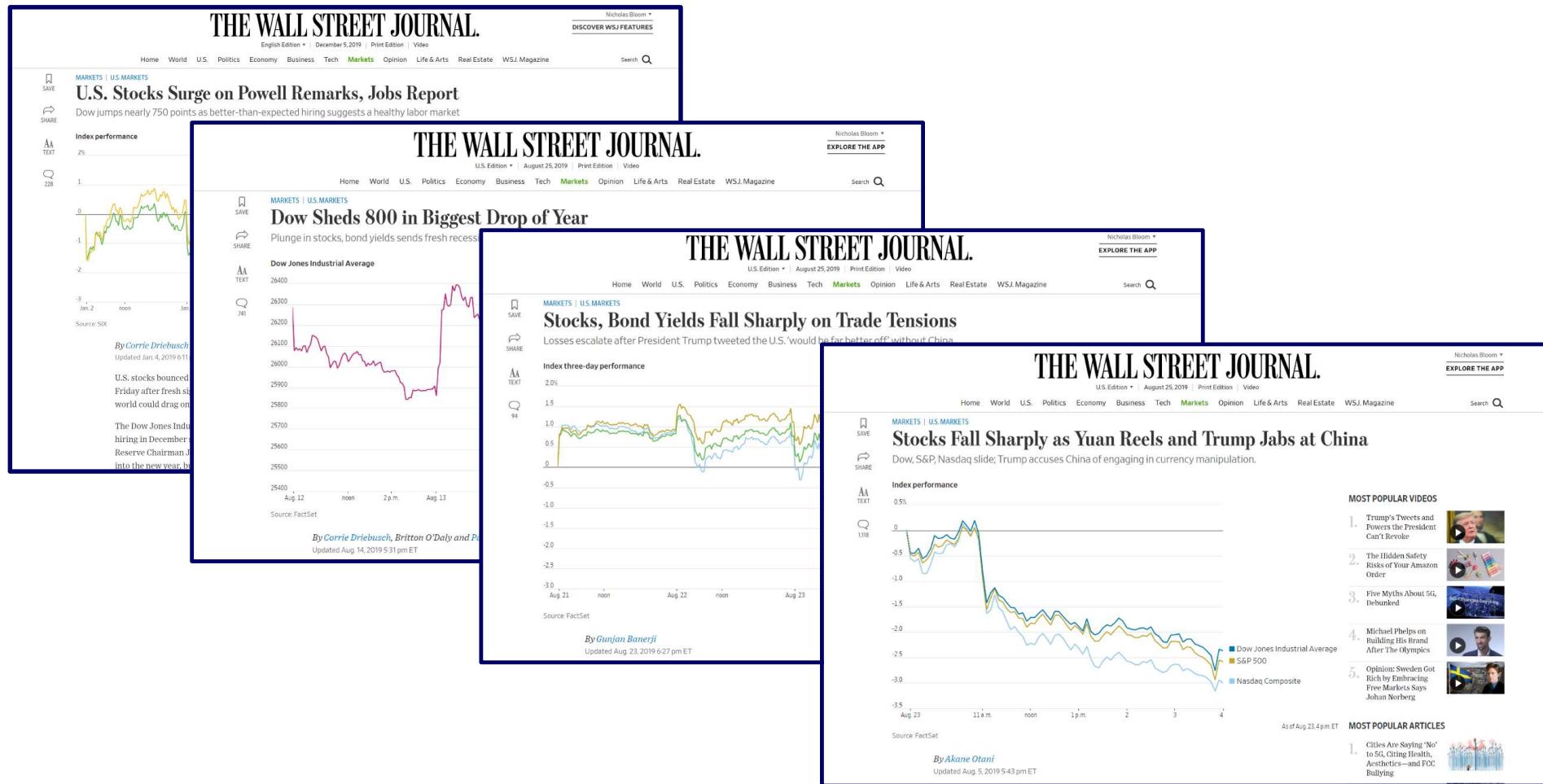
www.policyuncertainty.com

But stock volatility – e.g. the VIX (1 month ahead implied S&P500 volatility) – is not particularly high



So felt like a puzzle – media and business perception that uncertainty is high, but the stock market is quiet?

Started by looking at stock-market jumps from 1900 onwards (defining jumps as changes >2.5%)



Basic Approach

1. Set daily jump threshold at $|2.5\%|$ for U.S
 - Picks up ~2% of all trading days in the U.S since 1900
 - Higher threshold for countries with more volatility
2. Find relevant newspaper article from next day
3. One or more coders reads the article (randomized assignment and ordering)
4. Record: **reason** for the jump, **geographic source**, **confidence** of reporter in explanation, **ease of coding** etc.

Why Does the Stock Market Move – two types of views

1. Eugene Fama: driven by discount rates, dividends, etc
2. Robert Shiller: Hard to explain fully by fundamentals; narratives develop and sometimes spread, affecting prices



Older Human Audit Work on Stock Jumps

- Niederhoffer (1971): World analyzes 432 major news events:

The most unequivocal pattern of influence reported below is that large changes are substantially more likely following world events than on randomly selected days.

- Cutler, Poterba and Summers (1988): Many major news events with no associated jump (updated by Cornell 2013)

market moves often occur on days without any identifiable major news releases, casts doubt on the view that stock price movements are fully explicable by news about future cash flows and discount rates.

We use humans to code >2.5% jumps in the next day newspapers

Meaningful:

1900-2018, average 6 jumps per year, accounting for 47% of total daily volatility

Practical:

Newspapers always discuss in next-day articles – no selection bias

Broad:

Examine over 5000 jumps in 15 countries, evaluating their cause and clarity

Why Use Human Coders?

Have

- Eco
 - Lan
 - Con

Article Talk Read Edit View history Search Wikipedia

William McChesney Martin

From Wikipedia, the free encyclopedia

William McChesney Martin Jr. (December 17, 1906 – July 27, 1998) was the ninth and longest-serving Chairman of the United States Federal Reserve Bank, serving from April 2, 1974 to January 31, 1983. He was a Washington journalist before entering politics.

Ford (surname)

From Wikipedia, the free encyclopedia

Contents

- 1 Early life
- 2 Career
 - 2.1 Head of the Bureau of the Budget
 - 2.2 Chairman of the Federal Reserve System
- 3 Legacy
- 4 See also
- 5 References
- 6 Further reading
- 7 External links

Early life [edit]

William McChesney Martin was born in 1906. He graduated from the University of Michigan in 1928 and began his career as a reporter for the Detroit Free Press. In 1933, he joined the staff of the U.S. Senate Committee on Banking and Currency, where he worked under Senator Henry A. Wallace. In 1937, he became a member of the staff of the House Committee on Banking and Currency, working under Representative Wright Patman. In 1940, he was appointed as a special assistant to the Secretary of the Treasury, serving under Secretary of the Treasury Henry Morgenthau Jr. In 1944, he was appointed as a member of the Office of Price Stabilization, serving under Director Harry Dexter White. In 1946, he was appointed as a member of the Board of Governors of the Federal Reserve System, serving under Governor Marriner Eccles. In 1951, he was appointed as a member of the Board of Governors of the Federal Reserve System, serving under Governor Paul McCracken. In 1955, he was appointed as a member of the Board of Governors of the Federal Reserve System, serving under Governor William McChesney Martin Jr. In 1960, he was appointed as a member of the Board of Governors of the Federal Reserve System, serving under Governor George Shultz. In 1965, he was appointed as a member of the Board of Governors of the Federal Reserve System, serving under Governor Arthur F. Burns. In 1970, he was appointed as a member of the Board of Governors of the Federal Reserve System, serving under Governor Paul Volcker. In 1974, he was appointed as a member of the Board of Governors of the Federal Reserve System, serving under Governor Alan Greenspan. In 1983, he retired from the Federal Reserve System.

The surname **Ford** has several origins. In some cases it originated as a name for someone who lived in near a *ford*,^[1] and is therefore derived from the Old English and Middle English *ford*.^[2] In some cases, the surname is derived from places named *Ford*. Examples of such places include *Ford* in Northumberland^[3] (from Old English *ford*),^[4] a place in Somerset,^[5] *Ford* in Shropshire^[3] (from Old English *ford*),^[4] *Ford* in West Sussex^[3] (from Old English *ford*),^[4] and *Forde* in Dorset.^[3]

In other cases, the surname is sometimes an anglicised form of three Irish surnames. Two such surnames are *Mac Giolla na Naomh*, a name meaning "son of *Gilla na Naomh*"; and *Mac Consháimha*, a name meaning "son of *Consháimha[6] These surnames were anglicised *Ford* because their final syllable was once erroneously thought to be the Irish áth ("ford").^[3] Another Irish surname anglicised *Ford* is Ó *Fuartháin*, a name meaning "descendant of *Fuarthán*".^[7] The personal name *Fuarthán*, derived from the Irish *fuar* ("cold"), was once taken to represent the Irish *fuarathán* ("cold little ford"), which led the name to be erroneously translated "ford".^[8] The former two Irish surnames were borne by septs centred in the province of Connacht, whilst the latter was borne by a sept centred in County Cork (in the province of Munster).^[9]*

In some cases the surname *Ford* is an americanized form of like-sounding Jewish surnames, or else a translated form of the German *Fürth*.^[3] Early instances of the surname *Ford* include *de la forda* in the eleventh century, *æt Fordan* in the twelfth-century, *de la Forthe* in the thirteenth-century, and *Foerde*^[10] and *de Furd* in the fifteenth century.^[11] The surname *Ford*, when found in Ireland, may be of English or Irish origin since many Ford families have immigrated to Ireland at various times in history. For example, a particular noted family of the name in County Meath emigrated from Devon in the fourteenth century.^[12] In Ireland, birth records for the year 1890 reveal that the surname *Ford* was much less common than the variant *Forde* (154 births compared to only 39).^[13]

0–9 · A · B · C · D · E · F · G · H · I · J · K · L · M · N · O · P · Q · R · S · T · U · V · W · X · Y · Z

Contents: See also · References

A [edit]

- Aiden Ford, a fictional character from the television show *Stargate Atlantis*
- Alan Ford (actor) (born 1937), English actor
- Alan Ford (swimmer) (1923–2008), 1940s American swimmer
- Alan Ford (comics), an Italian comics character
- Aleksander Ford (1908–1980), Polish film director

Key findings (to date):

1. Policy is important: 37% US jumps attributed to policy (and 26% internationally)
2. US dominates globally: Outside US, newspapers attribute 34% of jumps to US – while share attributed to Europe is under 5%
3. Monetary/Macro Jumps and Volatility: Volatility rises least after monetary triggered jumps – Fed calming the market?
4. Clarity Matters: Volatility higher after jumps with unclear explanation

Outline

Approach: Measurement and Methodology

Data: Validation

US Results: Stylized Facts

International Results: Stylized Facts

US Results: Implications of Different Jumps

Jump Categories

Each day's stock move is assigned primary & secondary cause

Policy Categories	Non-Policy Categories
Government Spending	Macroeconomic News & Outlook
Taxes	Corporate Earnings & Outlook
Monetary Policy & Central Banking	Commodities
Exchange Rate Policy & Capital Controls	Foreign Stock Markets
International Trade Policy	Unknown & No Explanation
Sovereign Military & Security Actions	Terrorist Attacks
Regulation	Other Non-Policy
Elections & Political Transitions	No Article Found
Other Policy	

Research Assistant Coders Trained on 136 page audit training guide

Home Tools Document 1 / 101

Page Thumbnails

19 20 21 22 23 24

Basic process (for The Wall Street Journal)
Variations for different newspapers and periods
Category definitions and example articles
Coding POCs
The research team

25 26 27 28 29 30

Tables
News reports, comments or analysis related to current economic conditions or events (e.g., interest rates, inflation, GDP, oil prices, etc.)
Opinions, editorials, columns, or commentaries on economic issues.

31 32 33 34 35 36

Monetary Policy and Central Banking 1
Monetary Policy and Central Banking 2
International Trade and Exchange Rate Policy 1
International Trade and Exchange Rate Policy 2
International Trade and Exchange Rate Policy 3
Regulation

37 38 39 40 41 42

Regulation 1
Regulation 2
Regulation 3
Sovereign Military and Security Actions 1
Sovereign Military and Security Actions 2
Sovereign Military and Security Actions 3

43 44 45 46 47 48

Sovereign Military and Security Actions 4
Electoral and Political Transitions 1
Electoral and Political Transitions 2
Electoral and Political Transitions 3
Electoral and Political Transitions 4
Other Policy (Specify)

Coding Large Daily Financial Market Moves

Data Construction Guide

Last Edited on 8 June 2017

Stanford University
The Leland Stanford Junior University

CHICAGO BOOTH
The University of Chicago Booth School of Business

Kellogg
School of Management

Example 1 (2/27/2020, S&P 500 index return -4.4%):

THE WALL STREET JOURNAL.

English Edition ▾ | February 27, 2020 | Print Edition | Video

Nicholas Bloom ▾
GET UPDATES

Home World U.S. Politics Economy Business Tech Markets Opinion Life & Arts Real Estate WSJ. Magazine

Search

SHARE

MARKETS | U.S. MARKETS

U.S. Stocks Slide Into a Correction as Virus Fears Show No Sign of Easing

Dow, S&P fall more than 4%, Treasury yields fall

Index performance since record closes

0%
-5
-10
-15

Feb. 20 Feb. 21 Feb. 24 Feb. 25 Feb. 26 Feb. 27

Correction territory

S&P 500 Nasdaq

As of Feb. 27, 4 p.m. ET

Source: FactSet

By Caitlin Ostroff, Chong Koh Ping and Karen Langley
Updated Feb. 27, 2020 4:02 pm ET

SAVE PRINT TEXT 1,284

U.S. stocks closed sharply lower Thursday as investors braced for the spreading coronavirus to slow business activity and depress corporate earnings.

The Dow Jones Industrial Average fell 4.4%, about 1,186 points, as of 4 p.m. Eastern time,

MOST POPULAR VIDEOS

- Trump Announces Pence Will Lead Coronavirus Response
- Multiple People Killed During Molson Coors Shooting
- How Governments Shut Down the Internet
- Opinion: Reality Sets in for Desperate Democratic Candidates
- Democratic Presidential Candidates Outline a Response to Coronavirus

MOST POPULAR ARTICLES

- What to Know About the New Coronavirus
- Smart Travel Planning in the Time of Coronavirus
- Gunman Kills Five at Molson Coors Plant

This article would receive a primary category of **Other-Specify (Corona virus)**.

The Geographic source would be the **US, China and South Korea**. It would have high journalist confidence as well as ease of coding.

Example 2 (9/29/2008, -8.7%): Government Spending

THE WALL STREET JOURNAL

Bailout Plan Rejected, Markets Plunge, Forcing New Scramble to Solve Crisis

2119 words

30 September 2008

The Wall Street Journal

J

A1

English

(Copyright (c) 2008, Dow Jones & Company Inc.)

WASHINGTON -- The House of Representatives defeated the White House's historic \$700 billion financial-rescue package -- a stunning turn of events that sent the stock market into a tailspin and added to concerns that the U.S. faces a prolonged recession if the legislation isn't revived.

The Dow Jones Industrial Average sustained its biggest point drop in history and its biggest closing decline since the day the markets re-opened after the Sept. 11, 2001, terrorist attacks. The Dow, which had opened sharply lower on fears of more possible bank failures, finished the day down 7%, with a 777.68 point drop to 10365.45. Losses to shares on the broader Dow Jones Wilshire 5000 index amounted, on paper, to \$1.2 trillion -- eclipsing the size of the proposed bailout package. The Nasdaq Stock Market finished down 9.1%.

The widely watched VIX index, a measure of market volatility often called "the fear index," closed at its highest levels in its 28-year history. In early trading in Asia Tuesday, Japan's Nikkei was off 4.5%, and other markets also were down.

The 228-205 vote, which defied a full-court press from the president and the Treasury secretary, marked a dark moment in a month that has shaken the financial system to its core and forced the government to take a host of ad hoc measures to shore up confidence. Earlier Monday, U.S. authorities helped arrange the sale of Wachovia Corp. to Citigroup Inc., while the Federal Reserve joined other central banks in injecting more funds into credit markets.

The bailout was designed in part to get financial institutions lending again by ridding the market of the toxic mortgage-backed securities and other holdings that lenders fear could cause borrowers to default. If credit markets continue to seize, the impact on businesses and consumers could be widespread. Access to loans would be reduced, crimping spending and investment. Economists said the credit crunch could lead to increased layoffs in the U.S. and prompt a hefty rate cut from the Federal Reserve.

This article is coded as **Government Spending (Policy)** because the first reason listed for the stock market plunge is the rejection of the government's bailout plan. The bailout plan itself involves the government spending money to help the economy, and even though it is a rejection of the plan, it is still coded as government spending. Geographic source would be the **US**.

Example 3: Monetary Policy and Central Banking

Financial Prices Soar in Reaction To Fed Comment

A WALL STREET JOURNAL NEWS ROUNDUP

Financial futures markets soared in reaction to a statement over the weekend by the Federal Reserve Board chairman that the central bank will pay less attention to weekly swings in the money supply.

"The market took that as an implication that the Fed would ease policy," said

Dennis Gartman, an analyst for A.G. Edwards Inc.

Before Fed Chairman Paul Volcker's weekend statement, participants in the futures market were figuring that an expected surge in the basic money-supply figures this week would prompt another round of credit-tightening actions by the Fed. Futures traders now figure interest rates will probably drift lower.

Prices of interest-rate futures, which move inversely to interest rates, closed up their daily allowable limit. The stock market indexes were also strongly higher on the theory that lower interest rates would enhance an economic recovery by most corporations.

Futures Markets

This article is coded as **Monetary Policy** because it cites the reason for the market rally as a statement from the Fed that they will pay less attention to weekly swings in the monetary supply, a change in their policy. The confidence and ease of coding would also be high because the article clearly claims the Fed statement is the reason for the jump.

Example

U.S. MARKETS

Dow J Points

Rebound pull

By Jessica
Updated

The Dow Jones session Wednesday S&P 500 on

All 30 stocks S&P. Shares including Ko appeared ro alongside a

But as in ma investors an adding near

This articl was no ob

Los Angeles Times

Jingle all the way: Dow Jones industrial average jumps 100 points

Specialist John O'Hara looks at the Dow Jones industrial average before the closing bell on the floor of the New York Stock Exchange. (Richard Drew / Associated Press)

By BLOOMBERG DEC. 26, 2018 | 5:10 PM

U.S. stocks staged one of the biggest rallies of the 9½-year bull market after coming within points of seeing it end. Major indexes surged about 5% or more. The price of crude oil jumped almost 10%.

All but one member of the Standard & Poor's 500 index finished higher, the Dow Jones industrial average jumped 1,086.25 points for its biggest-ever point gain, and the technology-heavy Nasdaq composite rallied 5.8%.

It was the market's biggest surge since March 2009.

Consumer shares paced the rally, with Amazon jumping 9.4% after reporting record holiday sales. Each member of the FAANG cohort — tech giants Facebook, Apple, Amazon, Netflix and Google parent company Alphabet — rallied at least 6.4%, while energy producers surged as crude oil leaped past \$46 a barrel.

All 30 Dow members gained, with Nike and Apple rising more than 7%. Newmont Mining was the only S&P 500 member to fall.

Good holiday retail sales figures "probably has a lot to do with what's happening today," said Kim Forrest, a senior portfolio manager at Fort Pitt Capital Group.

President Trump said a day earlier that the rout that took the benchmark S&P 500 index down 19.8% from its record provided a "tremendous opportunity to buy." Investors also welcomed Wednesday comments by Kevin Hassett — chairman of the White House Council of Economic Advisors — that Federal Reserve chief Jerome Powell's job is "100%" safe. Oil's best rally since 2016 boosted stocks' surge.

Even with the surge, the stock market is still on track for its worst December since 1931, during the depths of the Depression, and could finish 2018 with its steepest losses in a decade.

But Wednesday's reminder that consumers — a key part of the American economy — remain on solid footing helped soothe anxiety created by fears of a global economic slowdown and White House personnel churn. A late report that a U.S. government delegation will travel to China in two weeks to hold trade talks gave stocks a final push higher.

Unknown

The New York Times

Stocks Bounce Back From Edge of Bear Market

S&P 500 Wednesday 3,112.76

By Emily Flitter

Dec. 26, 2018

Throughout Wall Street's December meltdown, analysts have been saying that markets were plunging despite plenty of evidence that the United States economy remains strong and corporate profit

That argument finally found listeners on Wednesday, when early reports of a strong holiday-shopping season helped lift the S&P 500 by nearly 5 percent, its [best day since 2009](#). The Nasdaq added 5.8 percent, and the Dow Jones industrial average rose just under 5 percent. That jump, over 1,086 points, represented the Dow's best single-session gain ever, although a number of days have eclipsed that in percentage terms.

A substantial rise in crude oil prices added to the lighter mood, as did efforts from the White House to ease up on criticism of the Federal Reserve.

Thursday opened 3.7 percent higher.

The rebound in the United States offered investors a much-needed reprieve from a decline that had picked up speed in December. Stocks had fallen for four consecutive days through Monday, and

Example 5 (5/29/1962, -4.2%): Unknown

MARKET REACTION HAS MANY COLORS

Fear and Confidence Poles of Opinion in City

Fear and pessimism, confidence and optimism. These were the mixed emotions of the nation's stockholders yesterday as they contemplated the massive turmoil in the stock market.

In darkened brokerage house board rooms, in sun-lit sidewalk conferences, in the visitors' galleries above the floors of the New York and American Stock Exchanges, investors pondered, muttered and waited. It was a hard way to spend a lovely day in May.

Why were people selling? Why were others buying? The reasons were as varied as the people involved. Some answers were offered to a New York Times survey that ranged from the Battery to the Harlem River.

On the selling side there was fear. People were afraid that if they did not sell now, prices might go down further and they might lose more money.

No Answers for Some

For some people, there were no answers. "I work in the mailroom," a man told a knot of people on a street near City Hall Park. "Been around Wall Street for twenty years listening to the big men. They're all trying to explain the ups and downs, but they don't really know. Nobody knows."

This article is coded as **Unknown** because the articles offers multiple answers, many of them versions of unknown, signifying that no one appears to know why the market moved.

Outline

Approach: Measurement and Methodology

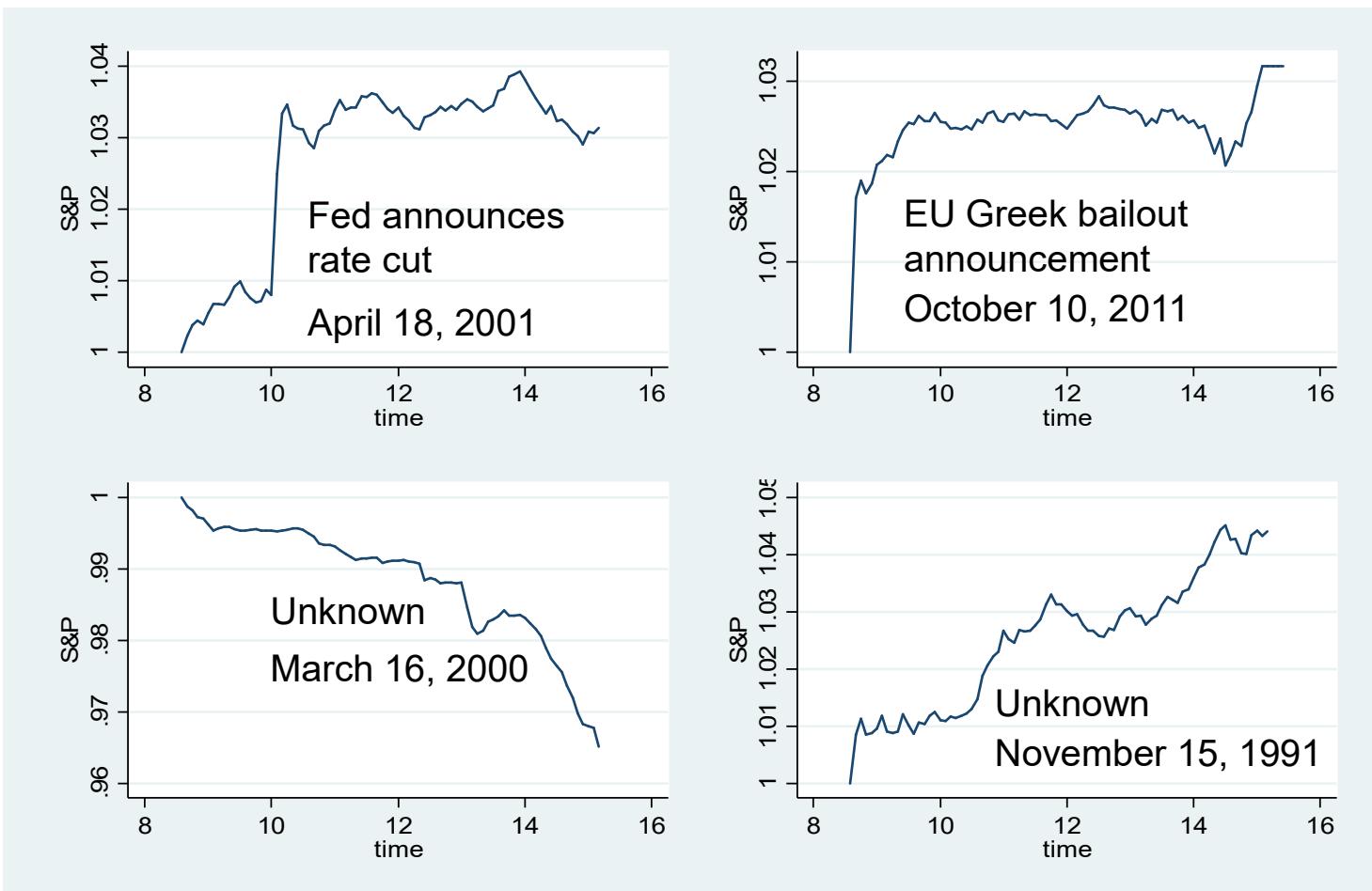
Data: Validation

US Results: Stylized Facts

International Results: Stylized Facts

US Results: Implications of Different Jumps

How Does the Journalist Know (or Not) the Jump Reason?



Notes: Each panel plots the standardized return (relative to day's open, in blue) in the S&P-500 based on 5-minute increments from market open to market close.

How reliable are these jump codings?

Two potential concerns about the method:

1. RAs reading same paper may code jumps differently
2. Results may depend on the newspaper consulted

To evaluate concerns we calculate agreement for:

1. RAs reading the same paper
2. RAs reading different papers - Boston Globe, LA Times, NY Times, WSJ, Washington Post

Cross-Coder and Cross-Newspaper Validation

Agreement rates	Policy vs. Non-Policy	Granular Categories
All Coders, All Papers	74%	42%
All Coders Within Paper	89%	71%

Using only the WSJ, we achieve rates over 90% for policy/non-policy and over 85% for the more granular categories.

Additional Validation

- ‘**Monetary Policy & Central Banking**’ codings are much more likely on **FOMC announcement dates**
- ‘**Macroeconomic News & Outlook**’ codings are much more likely on release dates for the **Employment Situation Report** and the **CPI Report**
- ‘**Elections & Political Transitions**’ codings are much more likely the day after **national elections**

Outline

Approach: Measurement and Methodology

Data: Validation

US Results: Stylized Facts

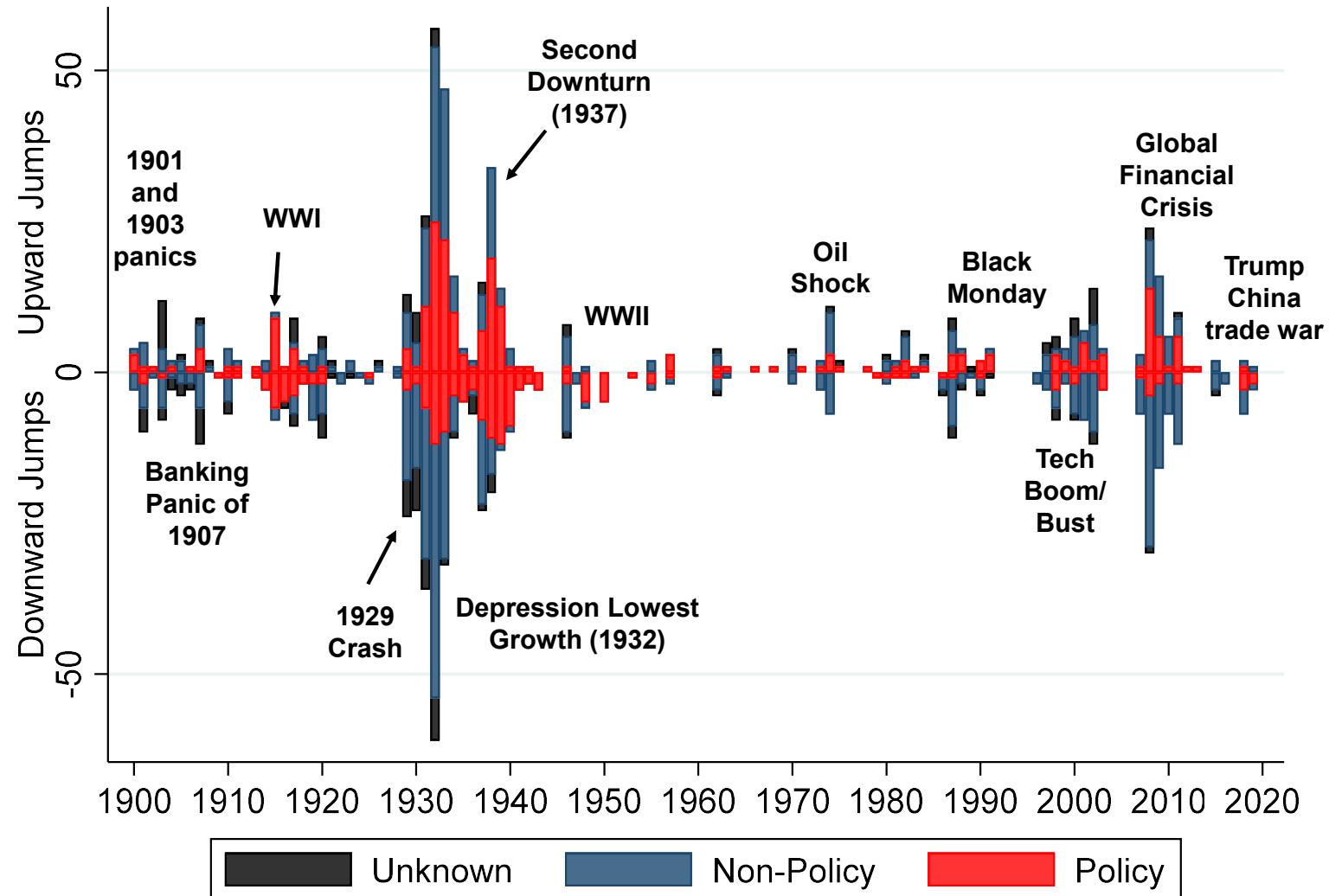
International Results: Stylized Facts

US Results: Implications of Different Jumps

Category Breakdown for US: 1900-2018

Category	# Jumps	% Jumps
Macroeconomic News & Outlook	270	24.4%
Unknown & No Explanation	163	14.8%
Corporate Earnings & Outlook	122	11.0%
Sovereign Military & Security Actions	112	10.1%
Monetary Policy & Central Banking	93	8.4%
Government Spending	70	6.4%
Commodities	65	5.9%
Regulation	53	4.8%
Other Non-Policy	42	3.7%
Elections & Political Transitions	29	2.6%
Other Policy	26	2.3%
Taxes	21	1.9%
Exchange Rate Policy & Capital Controls	11	1.0%
Foreign Stock Markets	10	0.9%
International Trade Policy	8	0.7%

US Jumps by Year (1900-2019) – 37% attributed to policy



Outline

Approach: Measurement and Methodology

Data: Validation

US Results: Stylized Facts

International Results: Stylized Facts

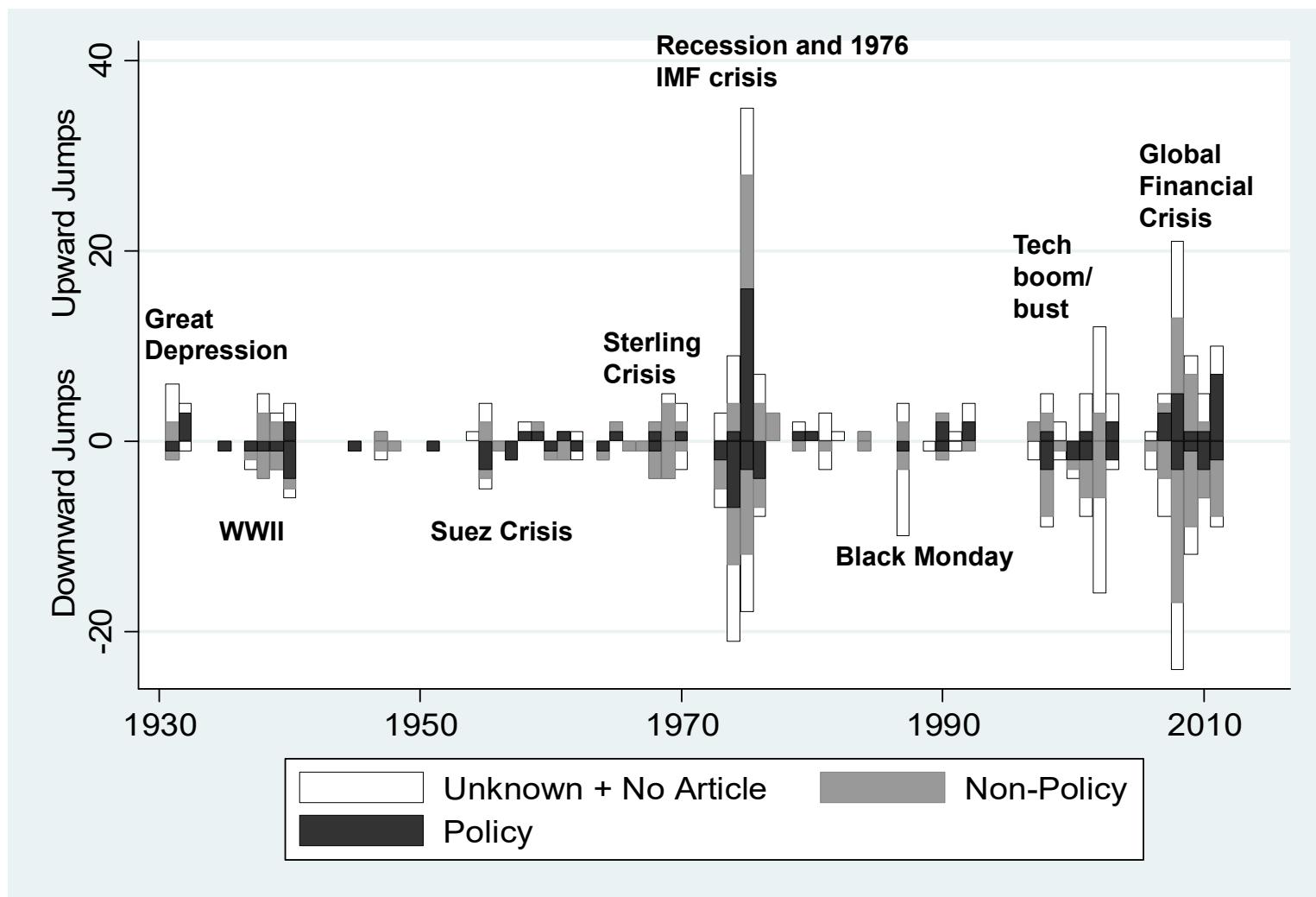
US Results: Implications of Different Jumps

Global sample selects countries with active stock-markets and good on-line press archives

Country	Start	Sources	Jump Threshold
United States	1885	Wall Street Journal	2.50%
United Kingdom	1930	Financial Times (UK Edition)	2.50%
Australia	1985	Australian Financial Times	2.50%
Canada	1980	The Globe and Mail	2.00%
China (Hong Kong)	1988	South China Morning Post	3.80%
China (Shanghai)	1994	Shanghai Securities Journal	4.00%
Germany	1985	Handelsblat, FAZ	2.50%
Greece	1989	Kathimerini, To Vima	4.00%
Ireland	1987	The Irish Times	2.50%
Japan	1981	Yomiuri and Asahi	3.00%
New Zealand	1996	New Zealand Herald	2.50%
Saudi Arabia	1994	Al Riyadh	2.50%
Singapore	1980	Business Times and Straits Times	2.50%
South Africa	1986	Business Day	2.50%
South Korea	1980	Chosun Ilbo	2.50%

Jump threshold was chosen such that jumps were approximately 2% of trading days

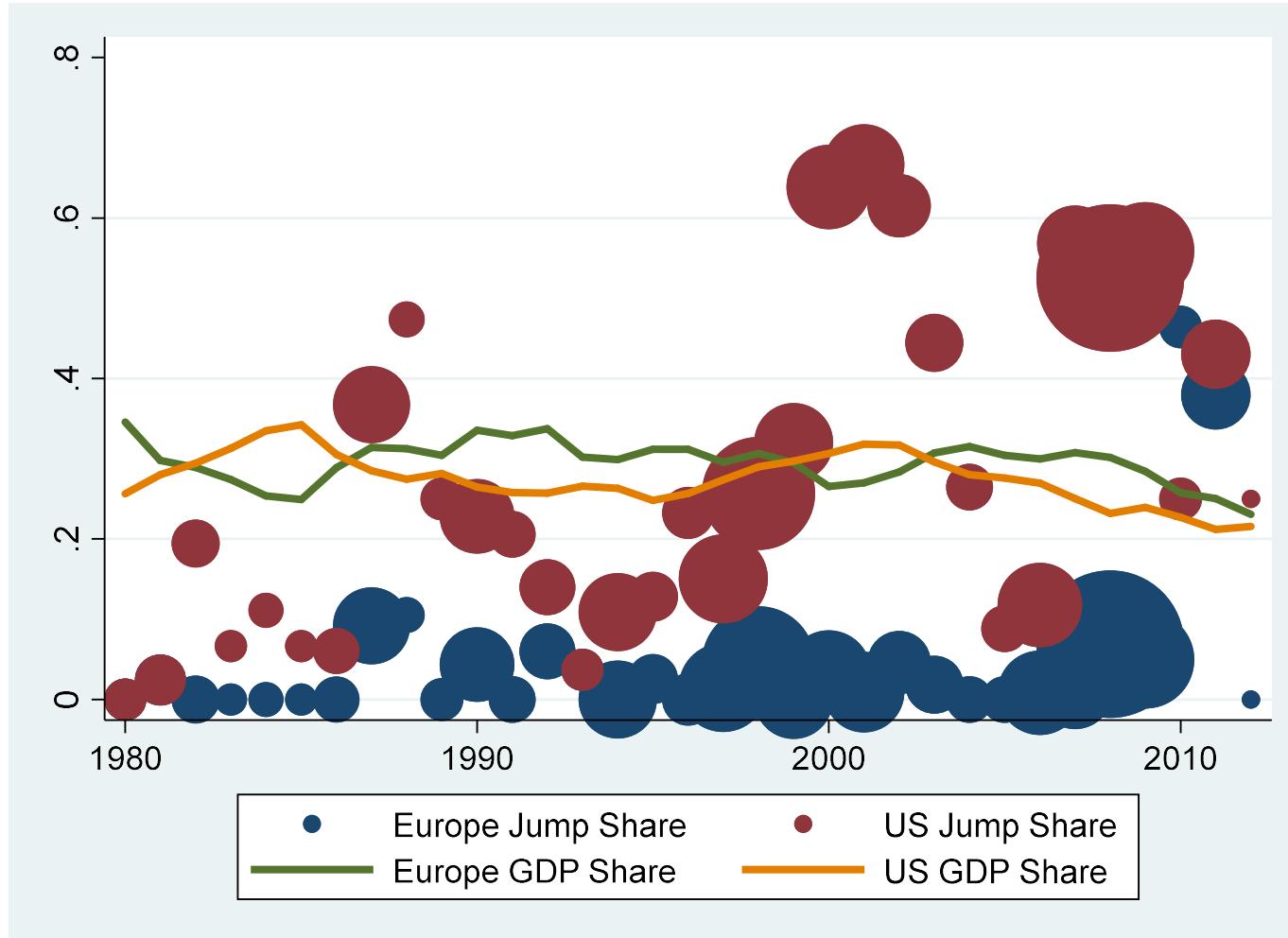
UK Jumps by Year (1930-2013)



Category Breakdown for International Data: 1980-2015

	International Data: 1980-2015	US Data: 1980-2015
	# Jumps	% Jumps
Macroeconomic News & Outlook	1014	24.6%
Unknown & No Explanation	457	11.1%
Corporate Earnings & Outlook	355	8.6%
Sovereign Military & Security Actions	99	2.4%
Monetary Policy & Central Banking	335	8.1%
Government Spending	165	4.0%
Commodities	180	4.4%
Regulation	102	2.5%
Other Non-Policy (Specify)	452	11.0%
Elections & Political Transitions	79	1.9%
Other Policy (Specify)	180	4.4%
Taxes	19	0.5%
Exchange Rate and Trade Policy	29	0.7%
Foreign Stock Markets	501	12.1%
Terrorist Attacks	50	1.2%
No Article Found	109	2.6%

US news accounts for large share of global jumps



Notes: Share of US and Europe source of stock-market jumps averaged over: Australia, China (HK), China (Shanghai), Japan, New Zealand, Saudi Arabia, Singapore, South Africa, South Korea. Dot size is proportional to the number of jumps in these countries each year. GDP share is “GDP (PPP) share of world total” from the IMF.

Outline

Approach: Measurement and Methodology

Data: Validation

US Results: Stylized Facts

International Results: Stylized Facts

US Results: Implications of Different Jumps

Different Types of Jumps Have Different Implications for Post-Jump Behavior

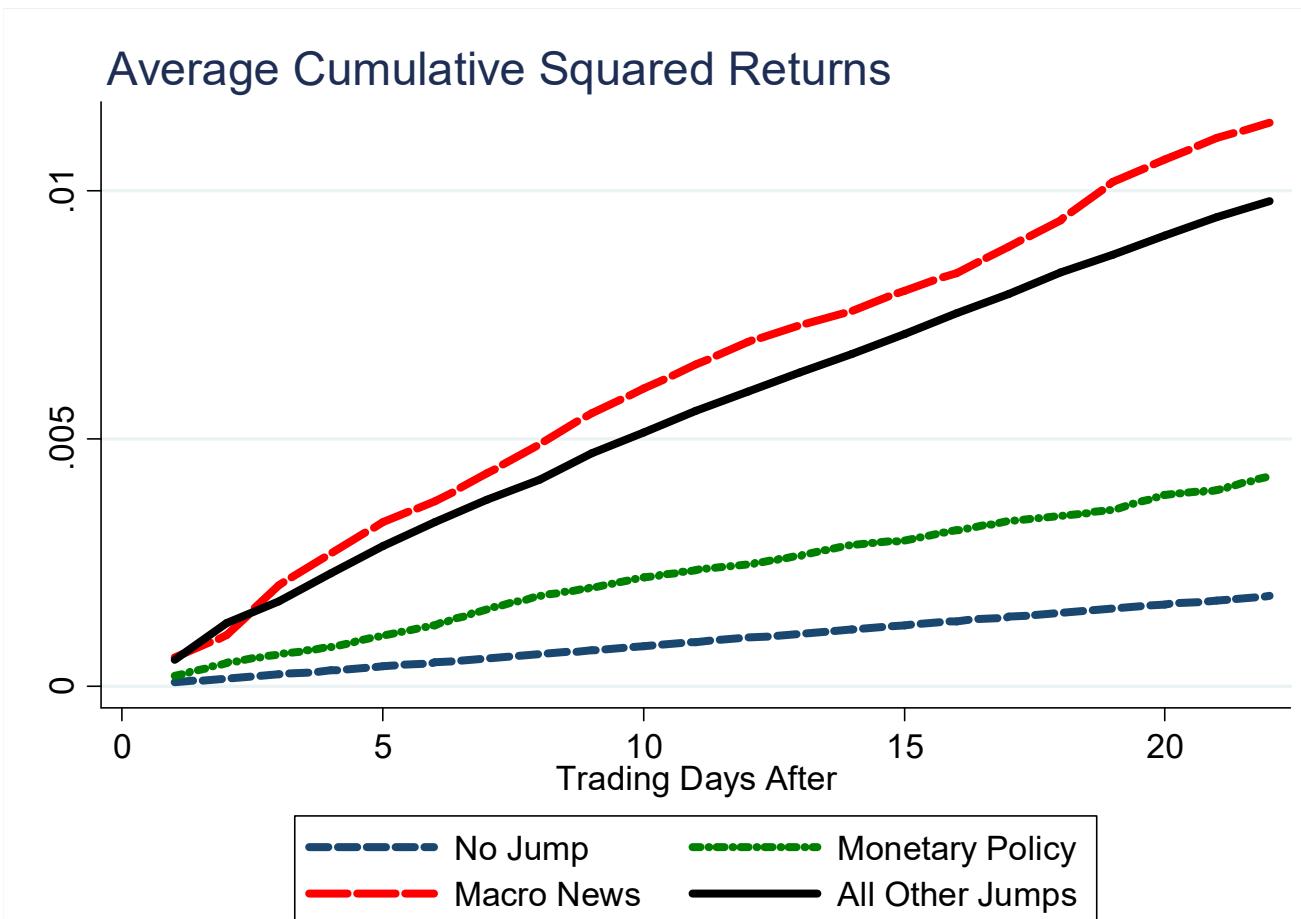
- Some jumps are caused by an increase in uncertainty
(3/22/2018, -2.52%)

Investors had widely brushed off concerns about trade and rising interest rates until earlier this year. But signs that interest rates will rise more quickly than expected, along with the Trump administration's aggressive push to narrow the U.S. trade deficit, drove a resurgence in volatility and renewed worries among investors that the nine-year bull market is losing its momentum.

- Other jumps are the result of a resolution of uncertainty
(9/16/1901, +4.1%)

pg. 9
FEATURES OF THE MARKET.
Even from the outset it was evident that there was a very marked restoration of confidence in the market with several important reasons to justify it. President Roosevelt's declared intention to maintain the policy of his predecessor, the settlement of the Steel strike. The easier tendency of money.

Volatility Rises Less after Monetary Jumps



Notes: Each line represents the average cumulative squared returns after a jump of each type. Sample: Daily data from 1900-2018

Regression Specification

$$\sum_{i=n-2}^{n+2} \frac{r_{t+i}^2}{5} = a + b(r_t \times 1_{r_t > 0}) + c(|r_t| \times 1_{r_t \leq 0}) +$$

Avg. RV in Market from $t + n - 2$ to $t + n + 2$

Return controls

$$d(r_{t-1}^2) + e\left(\sum_{i=1}^5 r_{t-i}^2\right) + f\left(\sum_{i=1}^{22} r_{t-i}^2\right) +$$

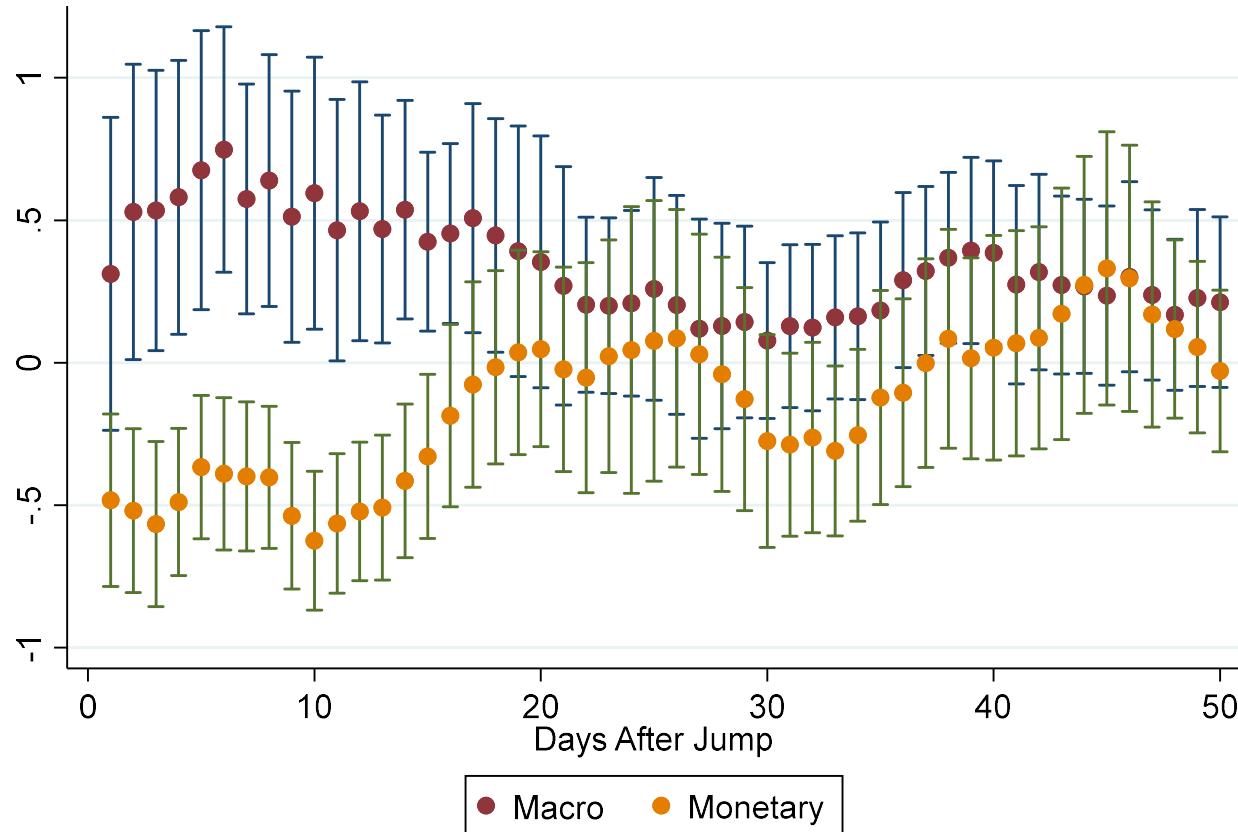
HAR controls

$$g macro_t + h monetary_t + \sum_{i=1}^k \beta_i category_i + e_t$$

Coefficients of interest

US data, 1900-2018

Volatility is Higher after Macro Jumps

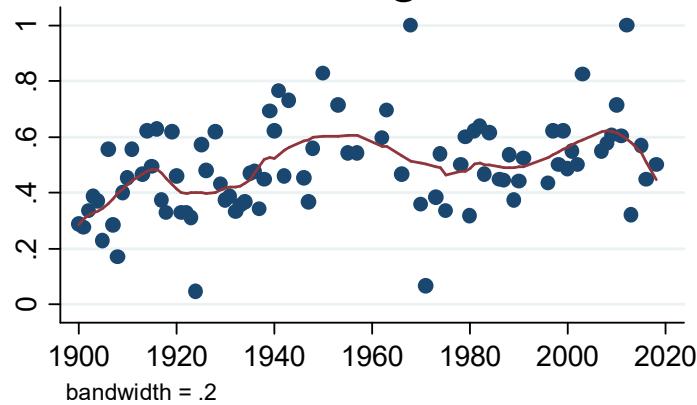


Bars represent a 95% confidence interval around the point estimate

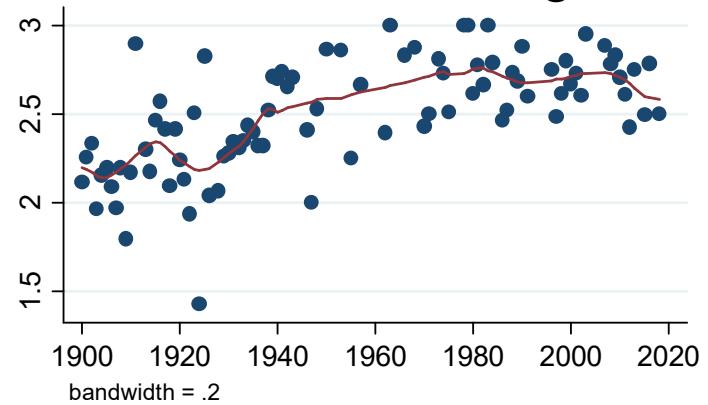
The significant difference between macro and monetary is robust to excluding all FOMC announcement dates. The left-hand-side variable has been normalized to have mean zero, and standard deviation one. Volatility calculated in 5 day window.

Going Beyond Categories: Clarity of Explanation

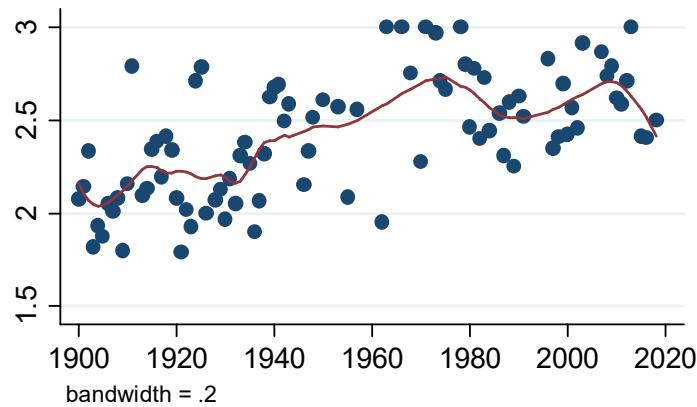
Pairwise Agreement



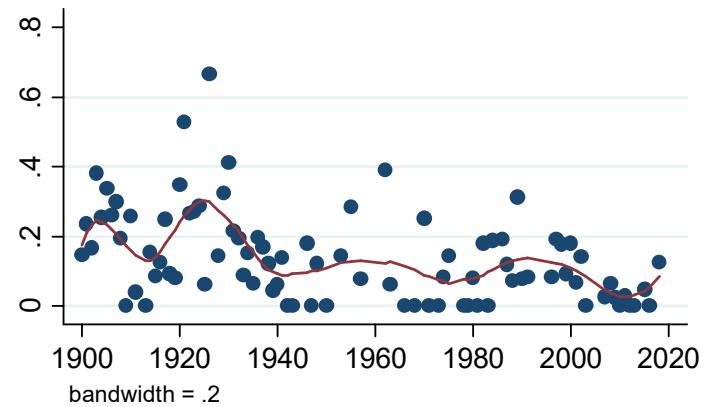
Ease of Coding



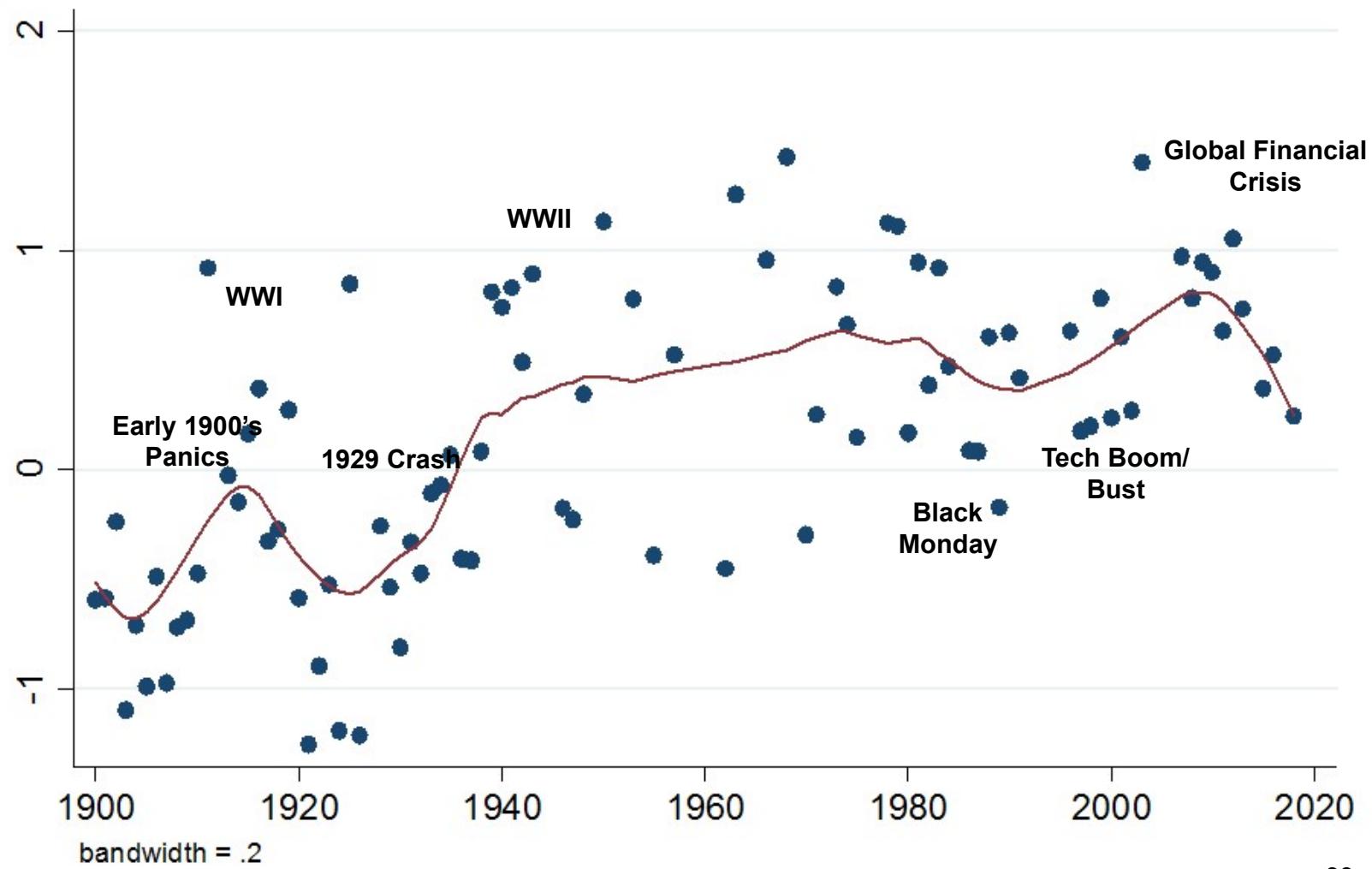
Journalist Confidence



Share Unknown



Clarity Has Increased Over Time



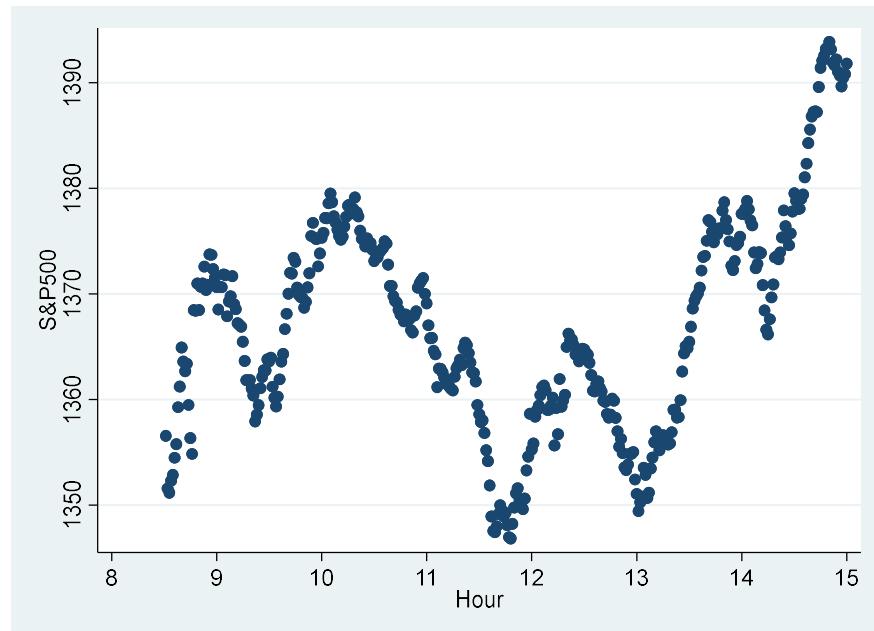
“Validation” of Clarity: higher intraday concentration

	Clarity Computed using Only the WSJ				All Papers	
	Jumps 2% and Larger		Jumps 2.5% and Larger			
Clarity	0.0103*** (0.003)	0.0116*** (0.003)	0.0147*** (0.004)	0.0147*** (0.004)	0.0259*** (0.004)	0.0248*** 0
Obs.	523	523	281	281	281	281
R-Squared	0.02	0.089	0.033	0.131	0.096	0.183
	No Controls	All Controls	No Controls	All Controls	No Controls	All Controls

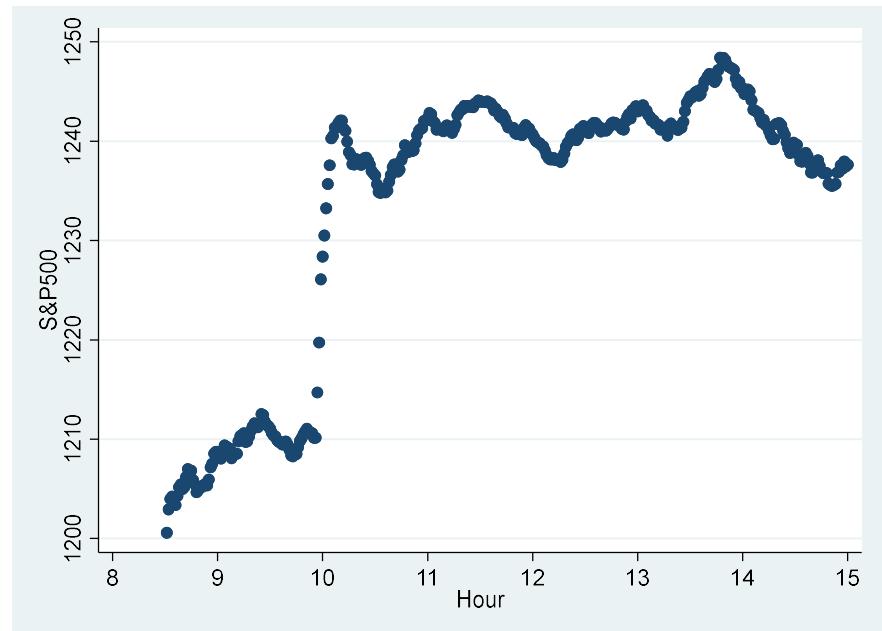
Notes: Concentration is defined as the absolute return in the 15-minute window with the largest absolute return in a given day, divided by the sum of 15-minute absolute returns over that same day. Includes data from 1986-2018. Controls include volatility over the previous day, previous week and previous month. The regressions also control for returns on the jump day itself, split into positive and negative components. The first 15 minute window each day includes the return from the previous day's close i.e. the overnight return. We consider this overnight return when computing concentration. Results are robust to using 5-minute windows instead of 15-minute windows, and to dropping the first 15-minute window each day. Over our full sample from 1900 to 2018, clarity has mean zero and standard deviation 1. In the subsample used for this table, clarity has mean 0.6 and standard deviation 0.8. Numbers in parenthesis are Newey-West standard errors with 3 lags, which was selected based on AIC.

Example: S&P500 for lowest and highest clarity days after 1985

Lowest Clarity (17th April 2000, +3.2% unknown)

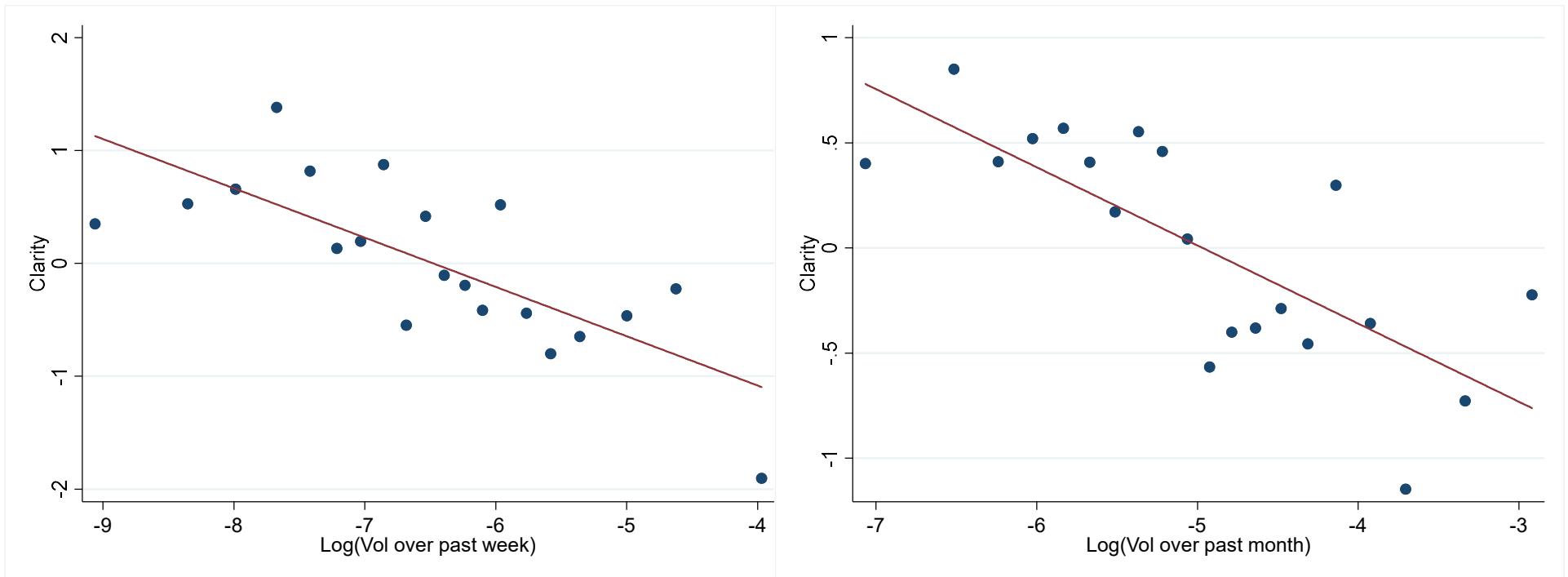


Highest Clarity (18th April 2001, +3.9% monetary)



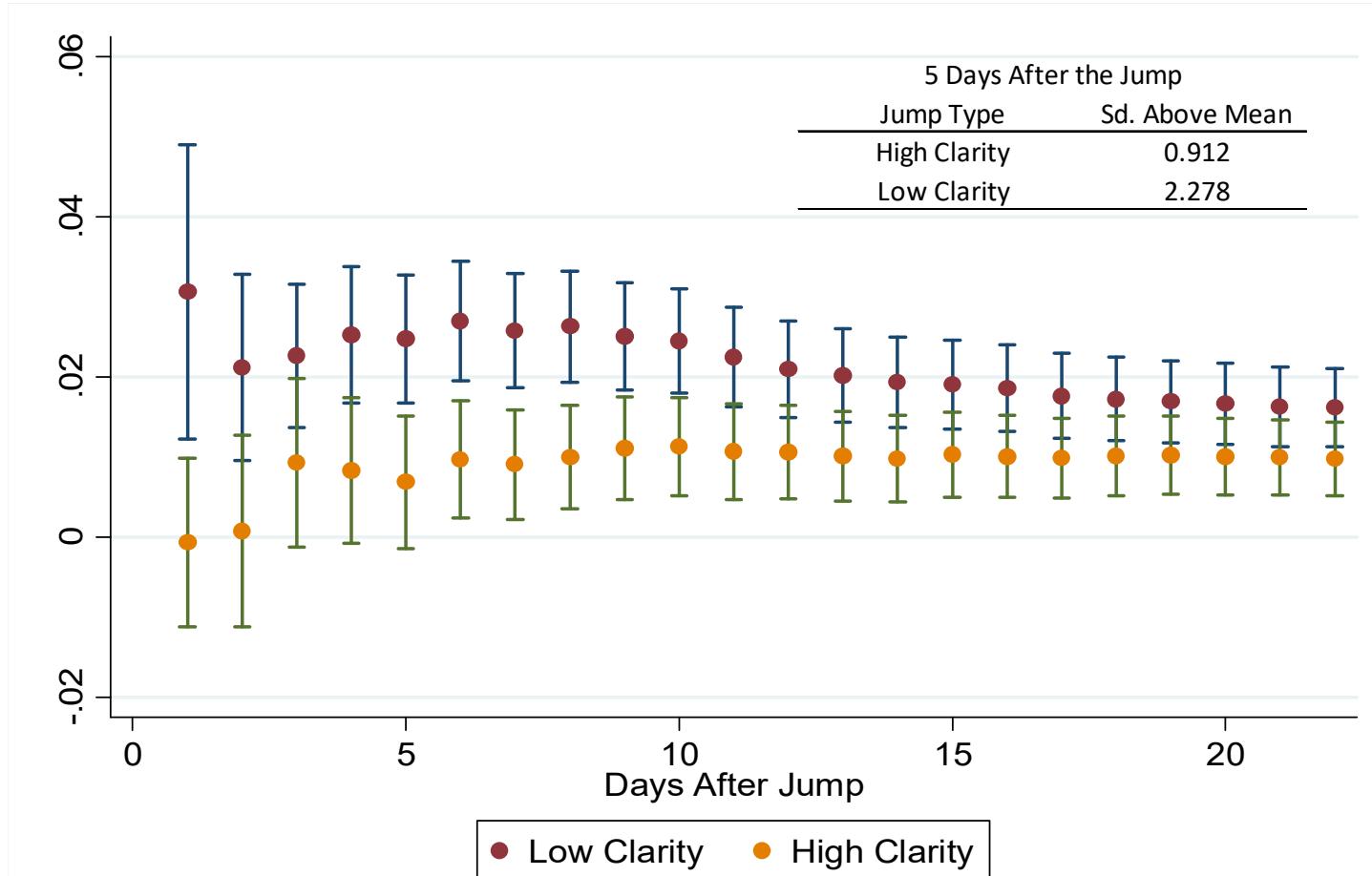
Notes: Plots the opening price of the S&P500 each minute from 8:30am to 3:00pm Eastern Time for the lowest clarity and highest clarity days post 1985 (the period for which we have minute-by-minute S&P500 data)

“Validation” of Clarity: higher previous volatility → lower clarity



Notes: All jumps between 1900 and 2018 with absolute return at least 2.5% Number of bins: 20, Number of obs: 1110. Clarity is computed from all newspapers. t-stat is from a regression of LHS on RHS with robust standard errors

Greater Clarity → Less Post-Jump Volatility



Notes: We run a regression, where the left hand side is cumulative realized volatility over days $t+1$ to $t+n$. On the right hand side, have an indicator variable for jumps in the top 50% of clarity (high clarity) and bottom 50% of clarity (low clarity). HAR controls include volatility over the past day, week and month.

Conclusion

Policy is important: 37% US jumps attributed to policy (and 26% internationally)

US dominates globally: Outside US, newspapers attribute 34% of jumps to US – while share attributed to Europe is under 5%

Monetary Policy Jumps and Volatility: Realized volatility rises less after jumps triggered by monetary policy than after other jumps

Clarity Matters: Volatility is lower after jumps with clearer explanations

Data available at www.stockmarketjumps.com

Stock Market Jumps Research Data Media About Us

We assess large stock market moves in the United States and a dozen other countries based on newspaper accounts. We classify the jumps by their trigger, their geographic origin and the clarity of journalist perceptions about the reason for the move.

Our Five Most Recent Codings

Date	Return	Primary Category	Clarity
8/23/2019	-2.59%	International Trade Policy	1.679
8/14/2019	-2.93%	Macroeconomic News & Outlook	0.733
8/5/2019	-2.98%	International Trade Policy	1.484
1/4/2019	3.43%	Macroeconomic News & Outlook	1.679
12/26/2018	4.96%	Unknown & No Explanation	0.038

[View More](#)

Positive and Negative U.S. Stock Market Jumps by Year
Daily Moves $> |2.5\%|$

Upward Jumps
Downward Jumps

1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010 2020

■ Unknown ■ Non-Policy ■ Policy

Based on next-day accounts in the Wall Street Journal.

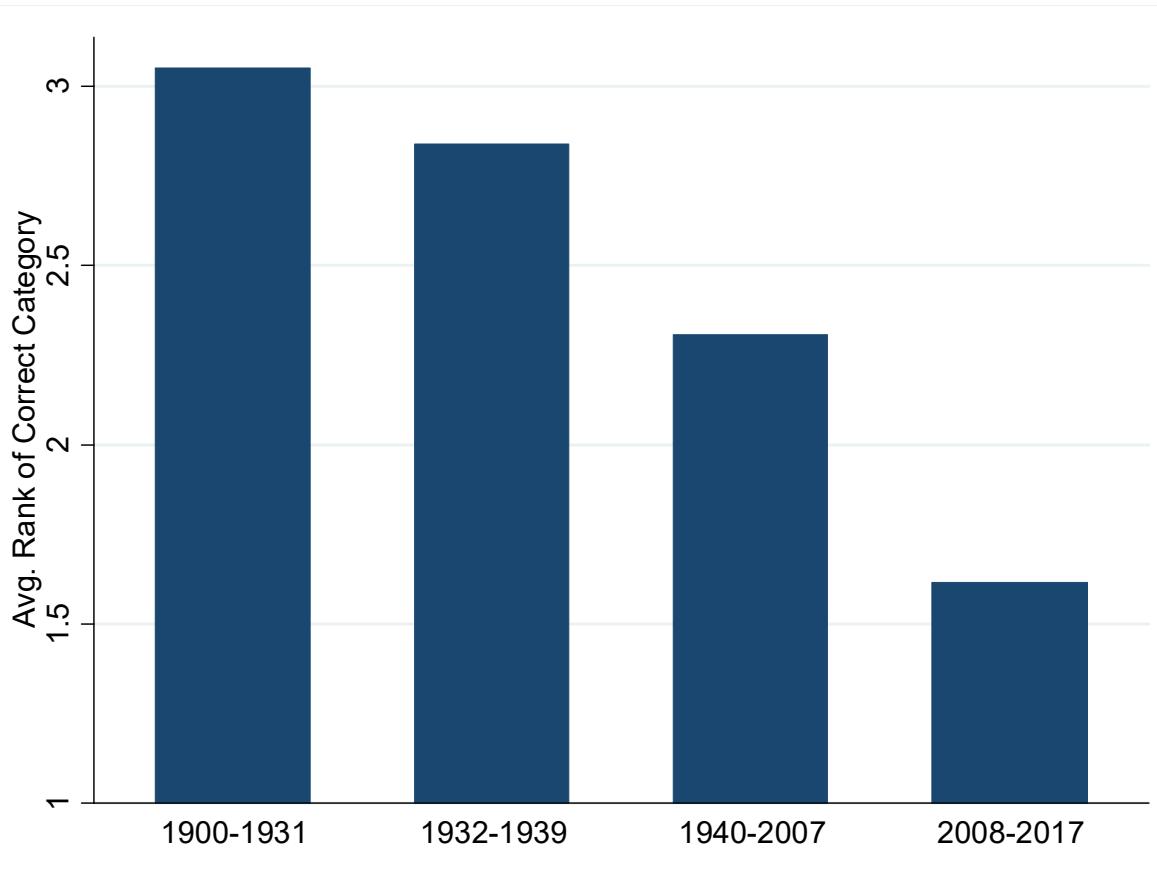
More recent computational (text→data) work – examples include:

- Tetlock (2007) share of negative words in “Abreast of the Market” 1984-1999 in the WSJ correlated with returns.
- Manela and Moreira (2017) use front page WSJ to predict stock volatility, generating an “NVIX” index

Large and rapidly growing literature (far more analysis privately within banks, hedge funds etc)



Algorithmic Categorization is More Accurate Over Time



Notes: 275 jumps in each period. After cleaning/stemming articles 3K unique words remain. Take top 100 words for each category, then add up tf-idf scores for each word for each category in each article. To clean the articles, we take the first 200 words in the article, require words appear in a category at least 3 times, and overall at least 5 times, take top 100 words by tf idf within each article. Exclude 'Other' and 'Unknown', as well as categories that do not appear at least 5 times in each sub-sample. Out of sample is based on a leave-one-out approach.

Back Up Slides

Policy Causes Larger Share of Positive Jumps

Absolute Jump Size, Relative to Threshold	US: Share of Jumps Attributed to Policy			
	1900-2018		1980-2018	
	Positive	Negative	Positive	Negative
+ [0,0.5%)	43%	27%	36%	17%
+ [0.5%,1%)	43%	27%	46%	12%
+ [1%,1.5%)	41%	40%	46%	33%
+2% or larger	52%	33%	51%	18%
All	45%	30%	43%	18%

Intra-day Patterns Correspond to Jump Categories



Notes: Top-left panel (Average) displays the average fraction of daily returns that have occurred in each 30-minute window of the trading day for all days with more than a 2.5% return in the S&P 500 from 1986 to 2018. Other panels display the deviation from these average returns for each of the listed subsets of trading days (as categorized by our human coders).

Jump Categories Correspond to Events

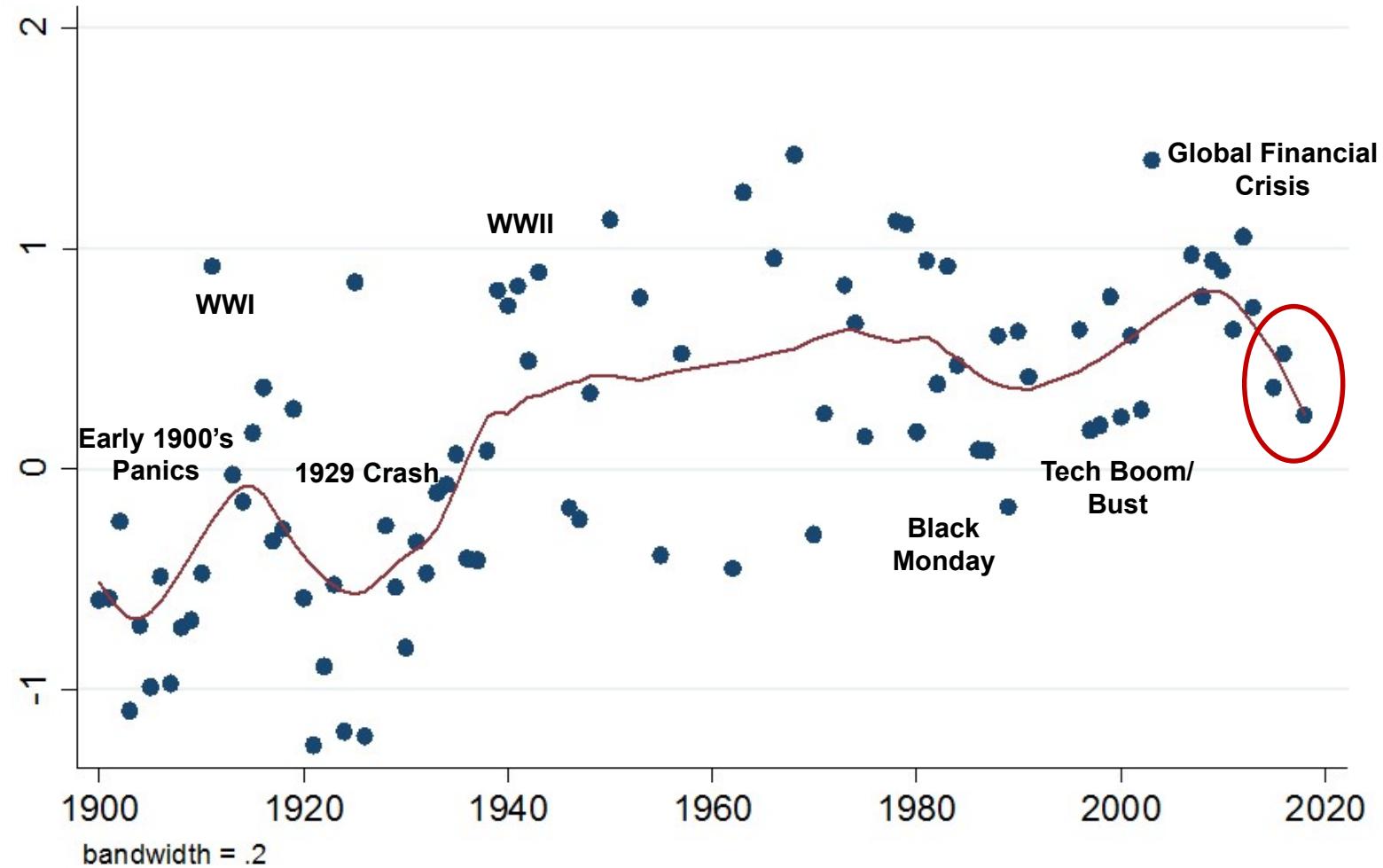
	<i>Dependent Variable: Indicated Jump Coding x 100</i>				
	(1) Monetary Policy	(2) Macro	(3) Elections	# Known Dates	
	81-93	94-2016	66-2016	29-2016	
FOMC Meeting Date or Next Day	1.39** (0.693)				159
FOMC Press Release Date		3.65*** (1.309)	0.59 (0.590)	0.14 (0.277)	215
CPI or Employment Situation Release Date	0.190 (0.499)	0.06 (0.297)	1.01** (0.455)	-0.10*** (0.020)	827
Day After National Elections	0.620 (1.038)	-0.64*** (0.241)	2.29 (2.246)	5.04** (1.992)	49
Constant	0.19*** (0.072)	0.34*** (0.073)	0.83*** (0.076)	0.09*** (0.017)	
# Codings	11	27	118	25	
Observations	3,288	5,792	12,838	22,929	
R-Squared	0.006	0.012	0.001	0.013	

Notes: Each column (1) to (3) reports a regression of jump coding values (times 100) for the indicated category on a set of known information-release dates. The results show that our newspaper-based attributions of jumps to (1) Monetary Policy, (2) Macro News & Outlook, and (3) Elections & Political Transitions occur with greater relative and absolute frequency on FOMC Press Release Dates, CPI or Employment Situation Release Dates, and the Day After National Elections, respectively. Results robust to adding day-of-week controls. *** p<0.01, ** p<0.05, * p<0.1

So what about Trump and Stock markets?



(1) Clarity recently dropped: the Trump random tweet effect?



(2) Trade suddenly matters: Trump's economic warfare

THE WALL STREET JOURNAL

Nicholas Bloom EXPLORE THE APP

What's News-- Stock Market Reverses Recent Downtrend--Steel ...
Wall Street Journal (1923 - Current file); Apr 11, 1939;
ProQuest Historical Newspapers: The Wall Street Journal
pg. 1

What's News—

Business and Finance

THE NEW YORK stock market yesterday reversed the sharp down-trend of the two previous trading sessions and regained a portion of Saturday's losses.

Opening irregularly firm, stocks quickly began a climb which ended with the Dow-Jones industrial average up 2.59 over Saturday's close to 124.03. Rail average gained 0.60 to 24.74 and utilities 0.24 to 20.95. BMT and BQT issues advanced sharply on price announcement under city unification plan. Volume was again heavy—1,650,000 shares. Bond averages closed mixed, with major interest again in transit issues. Commodities were irregularly higher; futures index rose 0.22 to 47.25. Foreign markets were closed.

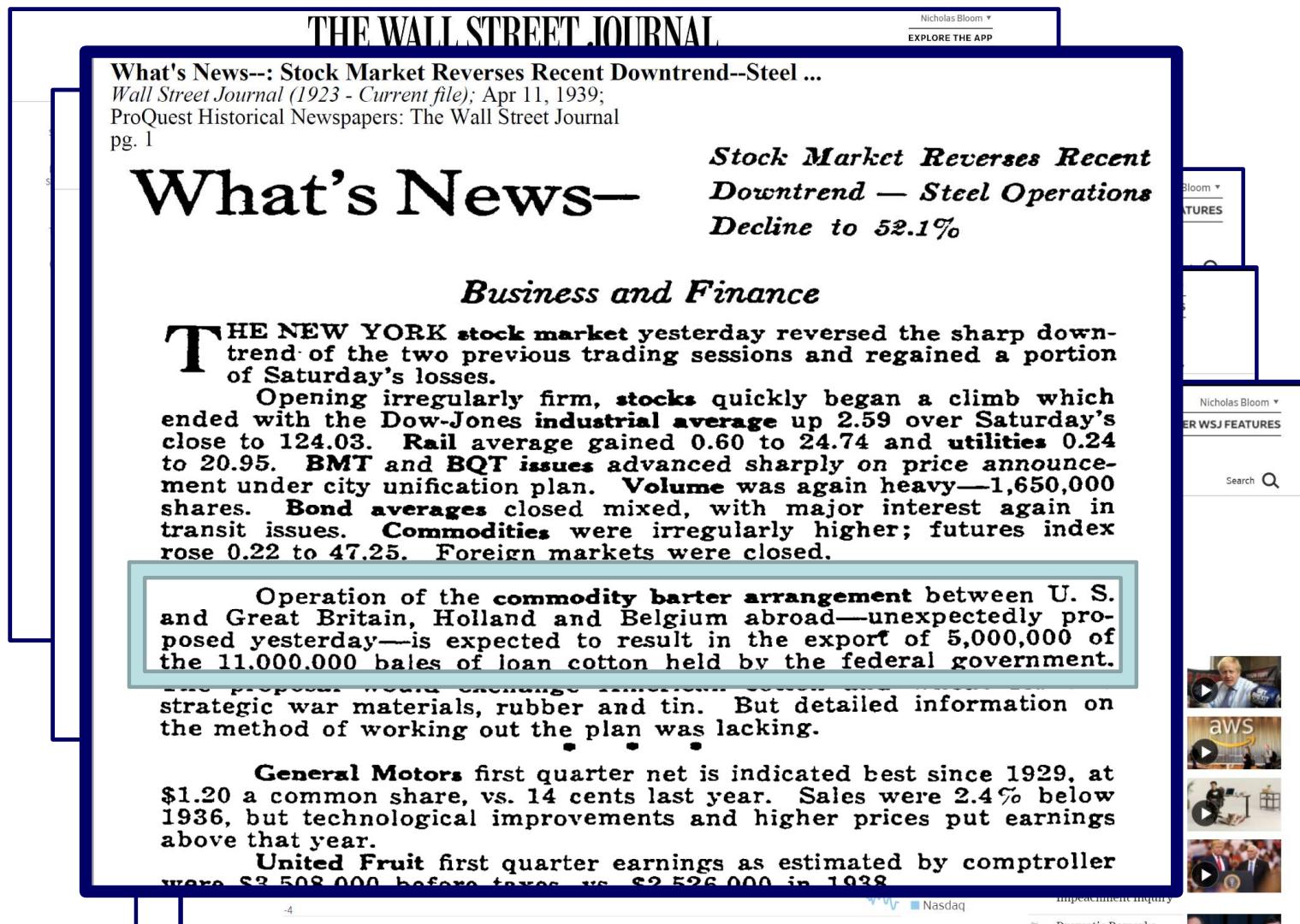
Operation of the commodity barter arrangement between U. S. and Great Britain, Holland and Belgium abroad—unexpectedly proposed yesterday—is expected to result in the export of 5,000,000 of the 11,000,000 bales of loan cotton held by the federal government.

The proposal would exchange strategic war materials, rubber and tin. But detailed information on the method of working out the plan was lacking.

General Motors first quarter net is indicated best since 1929, at \$1.20 a common share, vs. 14 cents last year. Sales were 2.4% below 1936, but technological improvements and higher prices put earnings above that year.

United Fruit first quarter earnings as estimated by comptroller were \$2,508,000 before taxes, vs. \$2,526,000 in 1938.

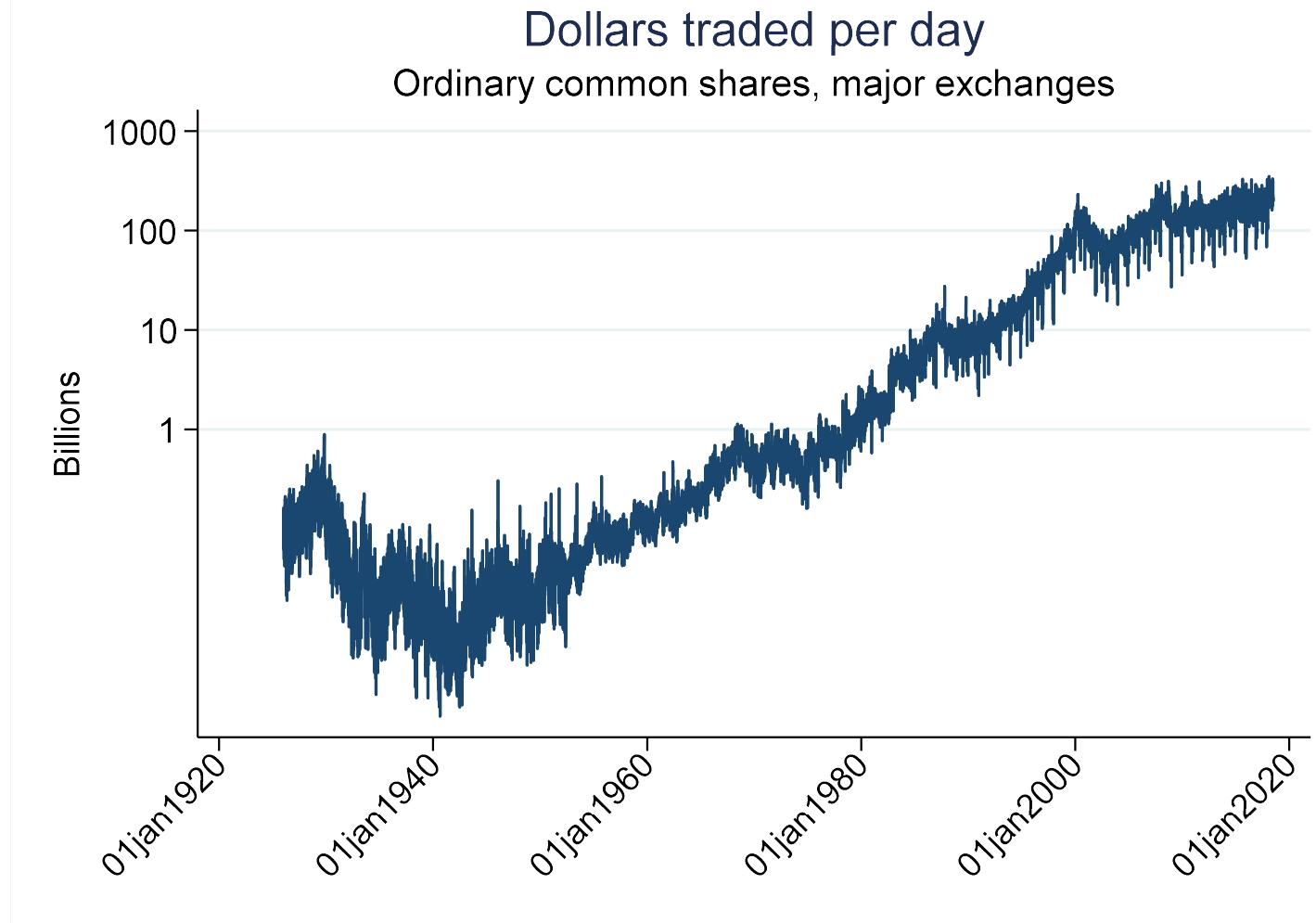
Nasdaq Impeachment Inquiry Dramatic Remarks



From 2017-2019
5/13 (about 40%)
jumps primarily
attributed to
trade policy

From 1945-2016
0/782 (0%)
jumps primarily
attributed to
trade policy

Maybe rising clarity is simply due to rising trading volume? Maybe, but different trends pre 1960

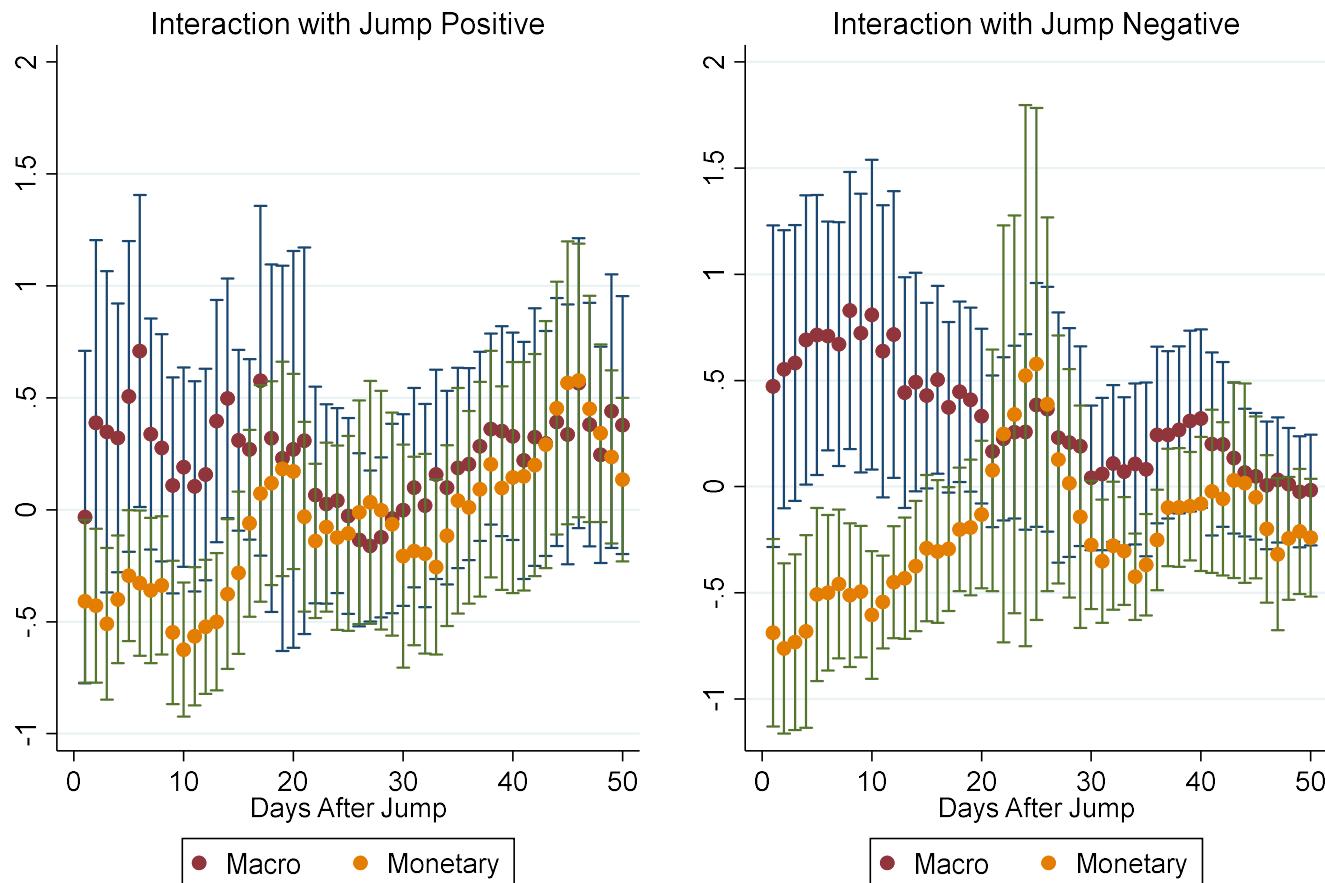


Greater Clarity → Less Post-Jump Volatility

	Realized Volatility Next Five Days				
	(1)	(2)	(3)	(4)	(5)
Clarity	-5.92*** (2.05)				
Avg. Ease of Coding		-8.88*** (2.95)			
Avg. Confidence			-5.48* (2.97)		
Share Unknown				8.39*** (3.20)	
Pairwise Agreement					-2.79 (2.82)
Observations	1,108	1,108	1,108	1,108	1,108
R-squared	0.183	0.183	0.179	0.183	0.178
Return Controls	YES	YES	YES	YES	YES
Decade Dummies	YES	YES	YES	YES	YES
Implied Elasticity	-0.14	-0.13	-0.09	0.08	-0.06

Notes: Columns 1-3 represent regressions, where the left-hand-side is the sum of squared returns over the 5 days following the jump. Clarity is the standardized average of the following components: the ease of coding, confidence, share of coders who agree and share of “Unknown” codings. It is mean zero and standard deviation one. US data, 1900-2016. Robust standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

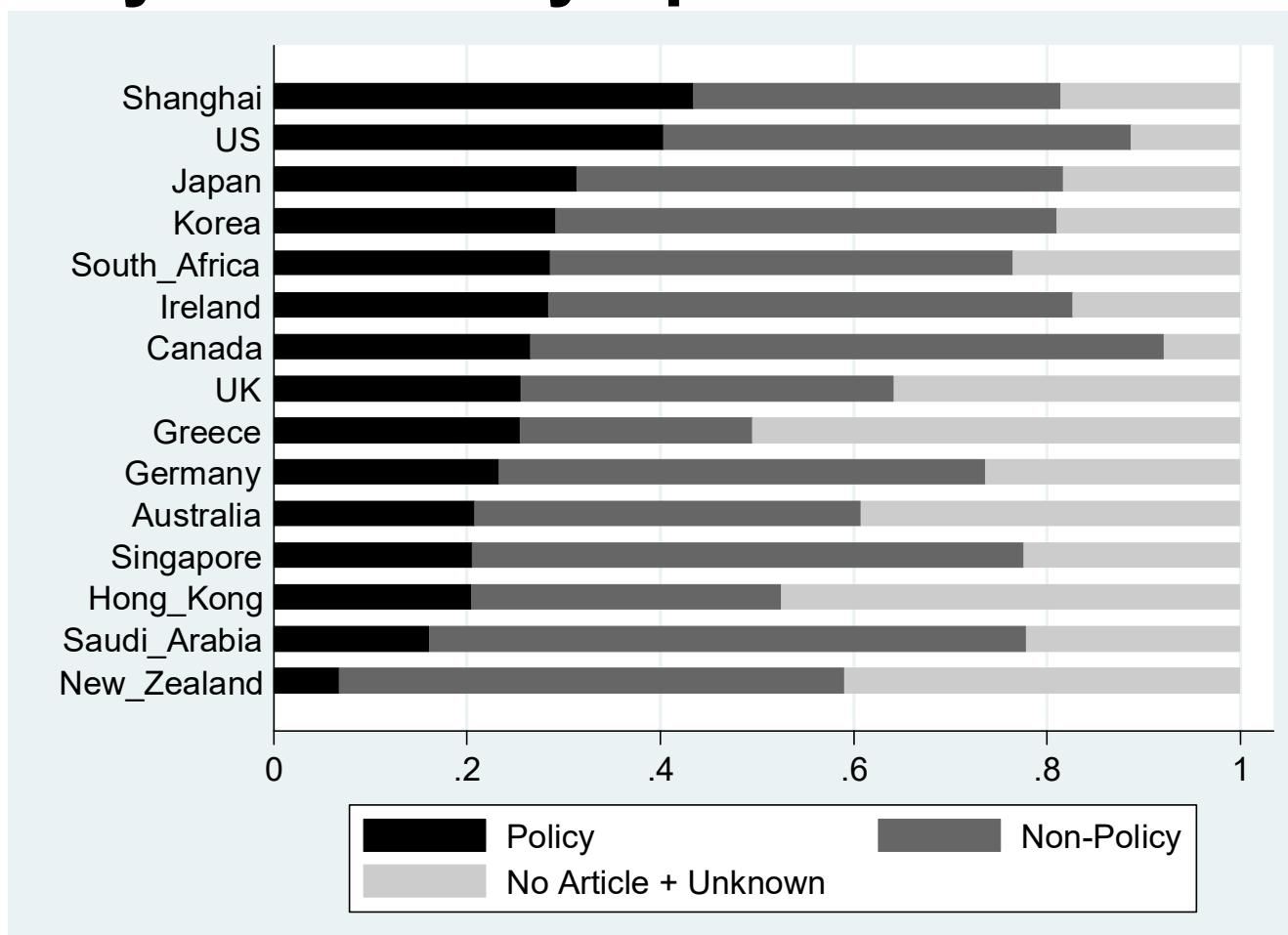
Robust to Interaction with Positive/Negative Jumps



Bars represent a 95% confidence interval around the point estimate

The left-hand-side variable normalized to have mean zero, and standard deviation one.

Policy/Non-Policy Split Across Countries



Notes: Each bar is the share of jumps by category within each country. All years available for each country are used.

Consistent with this US “importance”, in US markets most jumps are domestic, except WWII and the 2000s Euro-Crisis

