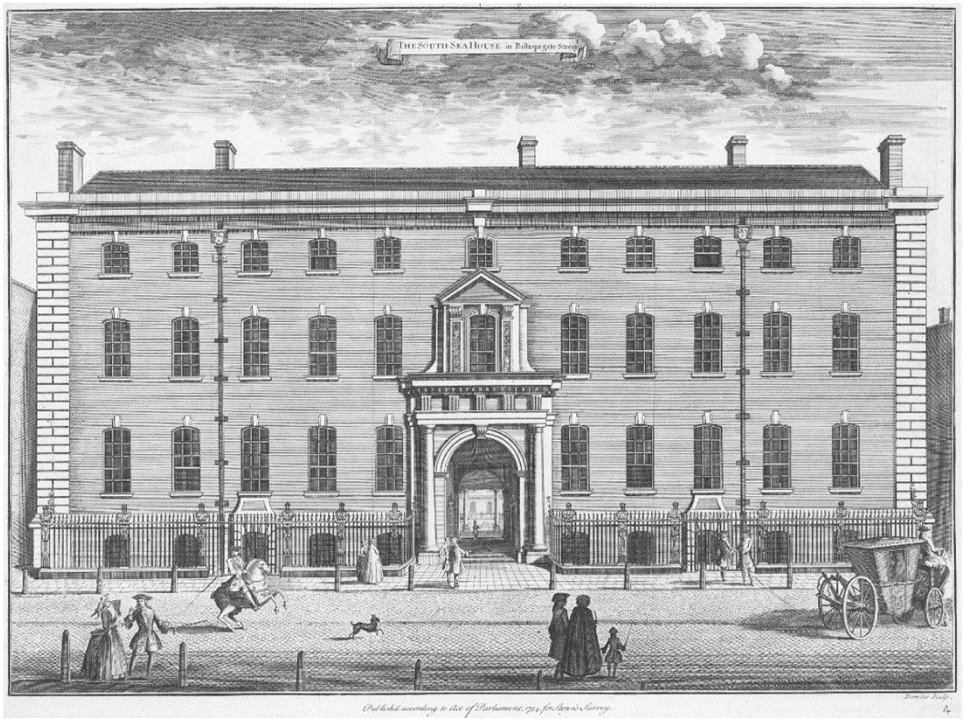
What Moves Stock Markets?

Scott R. Baker (Kellogg, Northwestern)
Nick Bloom (Stanford)
Steven J. Davis (Chicago Booth)
Marco Sammon (Kellogg, Northwestern)

September 2019

Stock markets jump and crash throughout history

Dutch Tulip Mania of 1637
("Viceroy" Tulip, valued at
>10 years worker wages)



The 1720 South Sea Bubble
(South Sea House Shown)

S&P500 continues to jump: 9 jumps +/-2.5% in 2018

MARKETS | U.S. MARKETS

U.S. Stocks Sell Off on Concerns About Trade

Dow tumbles more than 700 points, pulled down by shares of manufacturers and banks

678 COMMENTS

ncerns about technology companies and the outlook
s, intensified Thursday, sending the Dow Jones
700 points and adding to fears that stocks could be

trade
ern

MARKETS | U.S. MARKETS

U.S. Stocks Surge as Trade Worries Ease

The Dow industrials, after its worst week in more than two years, records its biggest or

S&P 500

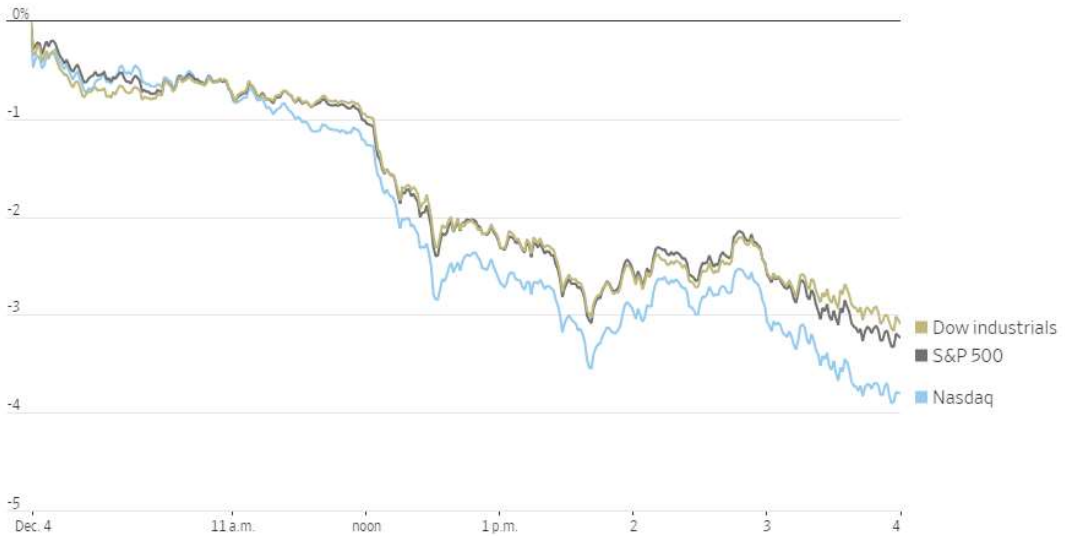
Source: WSJ Market Data Group

MARKETS | U.S. MARKETS

Dow Tumbles Nearly 800 Points as Trade Jitters Return

Bond yields retreat amid worries about pace of U.S. growth

Index performance on Tuesday



S&P500 continues to jump: 4 jumps +/-2.5% in 2019

THE WALL STREET JOURNAL.

Nicholas Bloom ▾
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MARKETS | U.S. MARKETS

Dow Sheds 800 in Biggest Drop of Year

Plunge in stocks, bond yields sends fresh recession signals

Dow Jo

26400
26300
26200
26100
26000
25900
25800
25700
25600
25500
25400

Source:

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MARKETS | U.S. MARKETS

Stocks, Bond Yields Fall Sharply on Trade Tensions

Losses escala

Index three-day p

2.0%
1.5
1.0
0.5
0
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0

Aug. 21

Source: FactSet

By Gu

Updat

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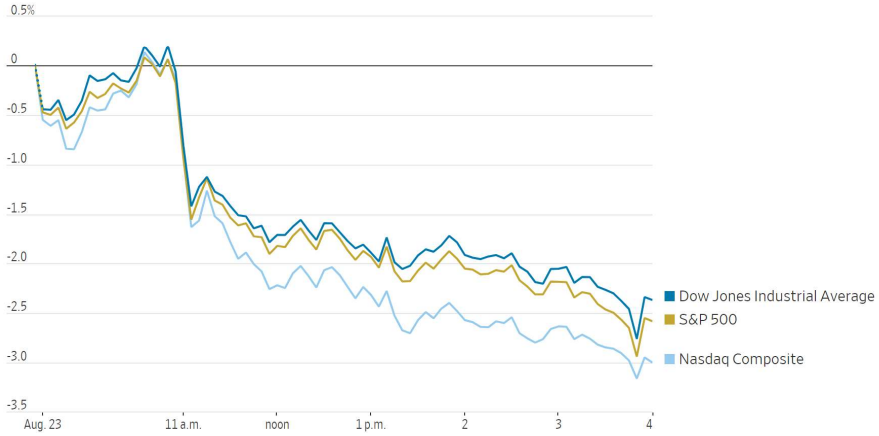
MARKETS | U.S. MARKETS

Stocks Fall Sharply as Yuan Reels and Trump Jabs at China

Dow, S&P, Nasdaq slide; Trump accuses China of engaging in currency manipulation.

Index performance



As of Aug. 23, 4 p.m. ET

Source: FactSet

By Akane Otani
Updated Aug. 5, 2019 5:43 pm ET

MOST POPULAR VIDEOS

1. Trump's Tweets and Powers the President Can't Revoke
2. The Hidden Safety Risks of Your Amazon Order
3. Five Myths About 5G, Debunked
4. Michael Phelps on Building His Brand After The Olympics
5. Opinion: Sweden Got Rich by Embracing Free Markets Says Johan Norberg

MOST POPULAR ARTICLES

1. Cities Are Saying 'No' to 5G, Citing Health, Aesthetics—and FCC Bullying

Why Does the Stock Market Move?

Two broad views:

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

We use humans to analyze next day newspapers

Scope:

- Coverage: 15 countries, including US from 1900
- Number: >5000 +/-2.5% jumps (plus bonds, forex)

Breadth:

- Causes: jump cause in 18 bins and geographic origin
- Clarity of attribution: how obvious the cause is

Quality:

- Economics undergraduates code articles
- Detailed training and weekly meetings, 4 papers x 2 RAs

But time consuming – working on this since 2012

Why Focus on Big Daily Jumps?

Meaningful:

- From 1900-2018, 3% of trading days (about 6 per year) have absolute market returns greater than 2.5%
- These account for 47% of daily volatility (squared returns)

Practical:

- Newspapers almost always discuss in next-day articles – no selection bias (e.g. Fisher, Martineau and Sheng 2017)
- Careful human readings are expensive, so focus on key events (& training sample for computer classification)

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)

> relatively small market responses to such news, along with evidence that large 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.

More recent comptutational (text→data) work

- Tetlock (2007) share of negative words in “Abreast of the Market” 1984-1999 in the WSJ correlated with returns.

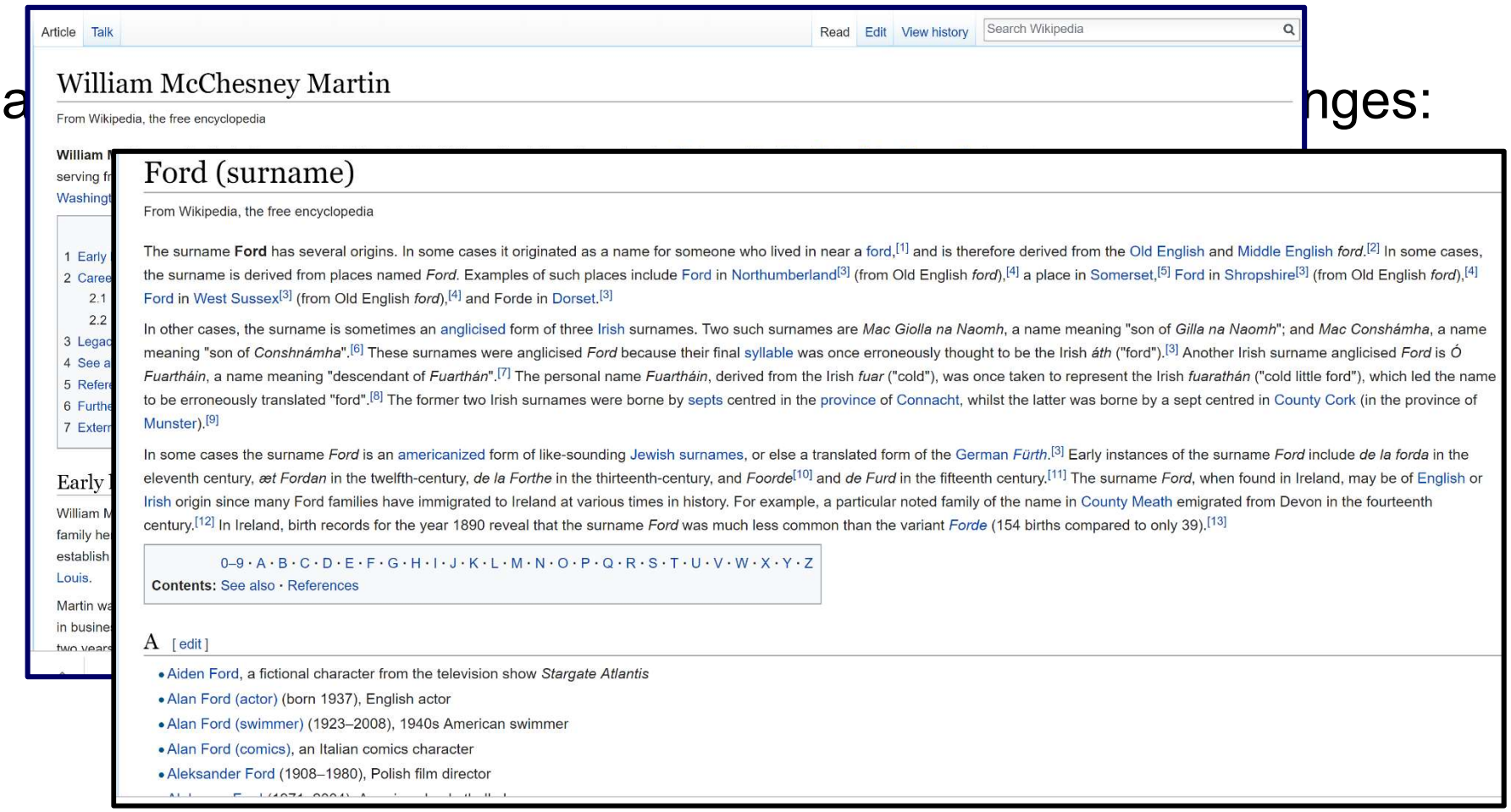
- Manela and Moreira (2017) use front page WSJ to predict stock volatility, generating an “NVIX” index

- Baker, Bloom & Davis (2016) EPU paper broadly similar

Why Use Human Coders?

Ha nges:

-
-
-



Article Talk Read Edit View history Search Wikipedia

William McChesney Martin

From Wikipedia, the free encyclopedia

William M
serving fr
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1 Early
2 Caree
2.1
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3 Legac
4 See a
5 Refere
6 Furthe
7 Extern

Early

William M
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Ford (surname)

From Wikipedia, the free encyclopedia

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 Conshámha*, a name meaning "son of *Conshnámha*".[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 *Fuartháin*, 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 *Foorde*[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 – above 20% US GDP share

3. Monetary/Macro Jumps and Volatility: Volatility rises least after monetary triggered jumps – FOMC 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

Basic Approach

1. Set daily jump threshold at |2.5%| for U.S
   - Picks up ~3% of all trading days in the U.S
   - Higher threshold for countries with more volatility

2. Find relevant newspaper article from next day

3. One or more human coders read the article (randomized assignment and ordering)

4. Record: **reason** for the jump, **geographic source**, **confidence** of reporter in explanation, **ease of coding** etc.

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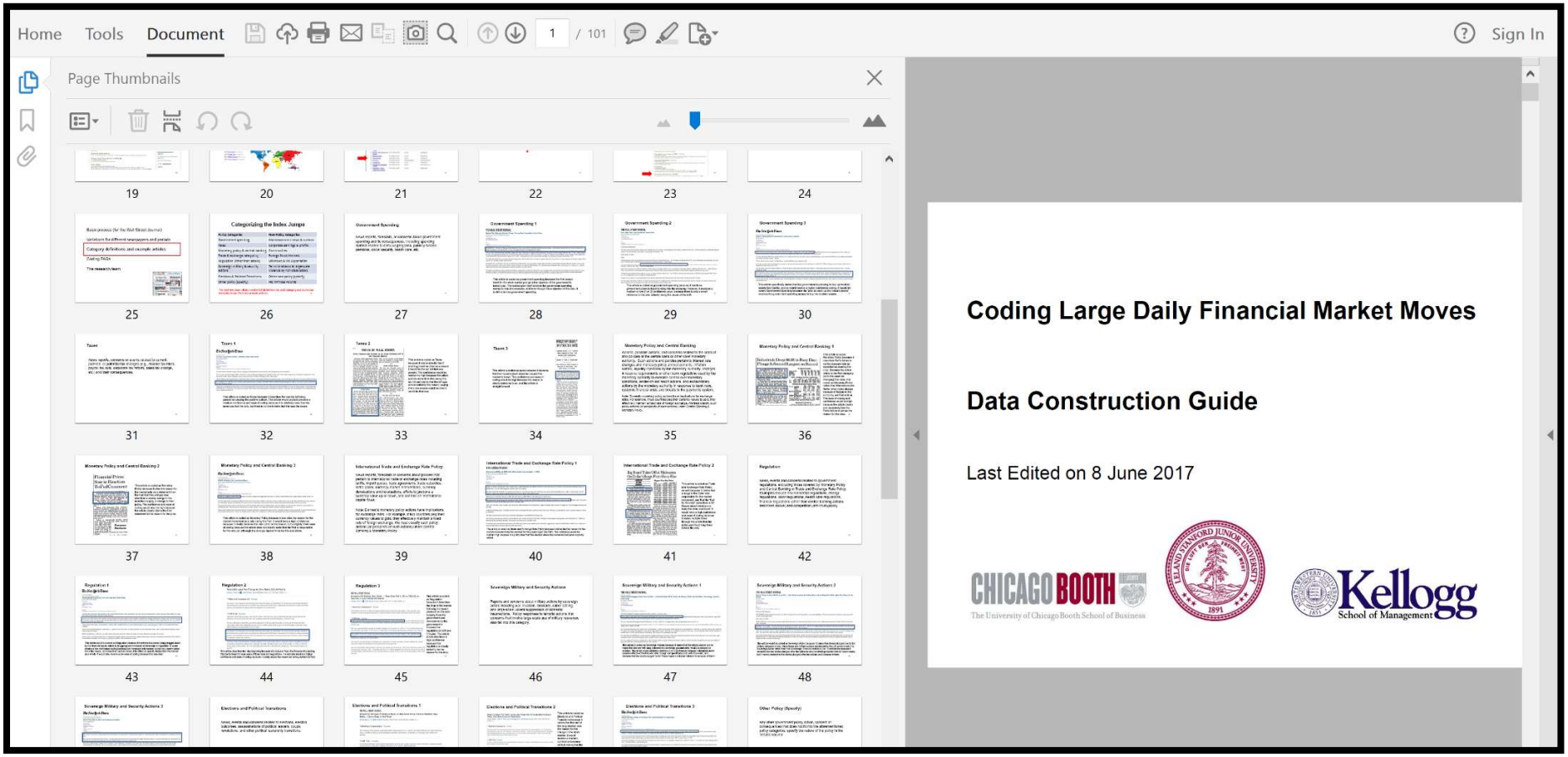
Jump Categories

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	

All Research Assistant Coders Trained on 136 page audit training guide



Example 1 (2/8/2018, S&P 500 index return -3.75%):

DJIA **24190.90** 1.38% ▲ S&P 500 **2619.55** 1.49% ▲ Nasdaq **6874.49** 1.44% ▲ U.S. 10 Yr **0/32 Yield** 2.854% ▼

THE WALL STREET JOURNAL.

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https://www.wsj.com/articles/asian-shares-lack-direction-1518051458

U.S. MARKETS

Dow Industrials Plunge Into Correction

Blue-chip index falls more than 1,000 points and is now down more than 10% from its January high

By Akane Otani and Jon Sindreu

Updated Feb. 8, 2018 4:33 p.m. ET

Fears that a pickup in growth and inflation could force central banks to tighten monetary policy more quickly than expected have driven government-bond yields higher throughout the year. That, in turn, can pressure stock prices as fixed-income interest payments become more attractive than stock dividends.

This article would receive a primary category of **Macroeconomic News and Outlook (Non-Policy)** because the article links rising inflationary pressures to tighter monetary policy. These explanations fit well with Taylor Rule-like conduct by the Fed, and therefore would not be classified as monetary policy. The Geographic source would be the **US**.

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

THE WALL STREET JOURNAL.

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

By Sarah Lueck, Damian Paletta and Greg Hitt

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 (4/10/2001, +2.7%): Unknown

THE WALL STREET JOURNAL.

Nasdaq Surges 6% as Investors Grow Confident

By E.S. Browning. *Wall Street Journal* [New York, N.Y] 11 Apr 2001: C.1.

Abstract (summary) Translate

Full Text Translate

After months of pain, investors treated themselves to their second full-scale buying binge in the past four sessions, sending the Dow Jones Industrial Average to a close above the 10000 level again for the first time in nearly a month.

Money flowed out of bonds and into stocks, and falling bond prices pushed up the yield of the 10-year Treasury note back above 5%.

Some of the day's biggest news came after the close of regular-hours trading, when mobile-phone maker Motorola announced a sharper-than-expected first-quarter loss, based on worse-than-expected margins. One test of the current rebound's resiliency will be how sharply technology stocks react to the bad Motorola news. Motorola shares fell 7% in after-hours trading.

There wasn't a single catalyst for the day's sharp stock gains. But traders said a variety of factors, including the possibility of a tax cut and upbeat comments from a succession of Federal Reserve officials, have spurred hopes for an end to the economic slowdown and the corporate earnings slump. No one can be sure that the economy is getting ready to improve, of course, but some investors are betting the market has to "bottom" sometime and that this could be it.

This article is coded as **Unknown** because the author clearly states that there was no single catalyst, signifying that no one knows why the market moved.

Outline

Approach: Measurement and Methodology

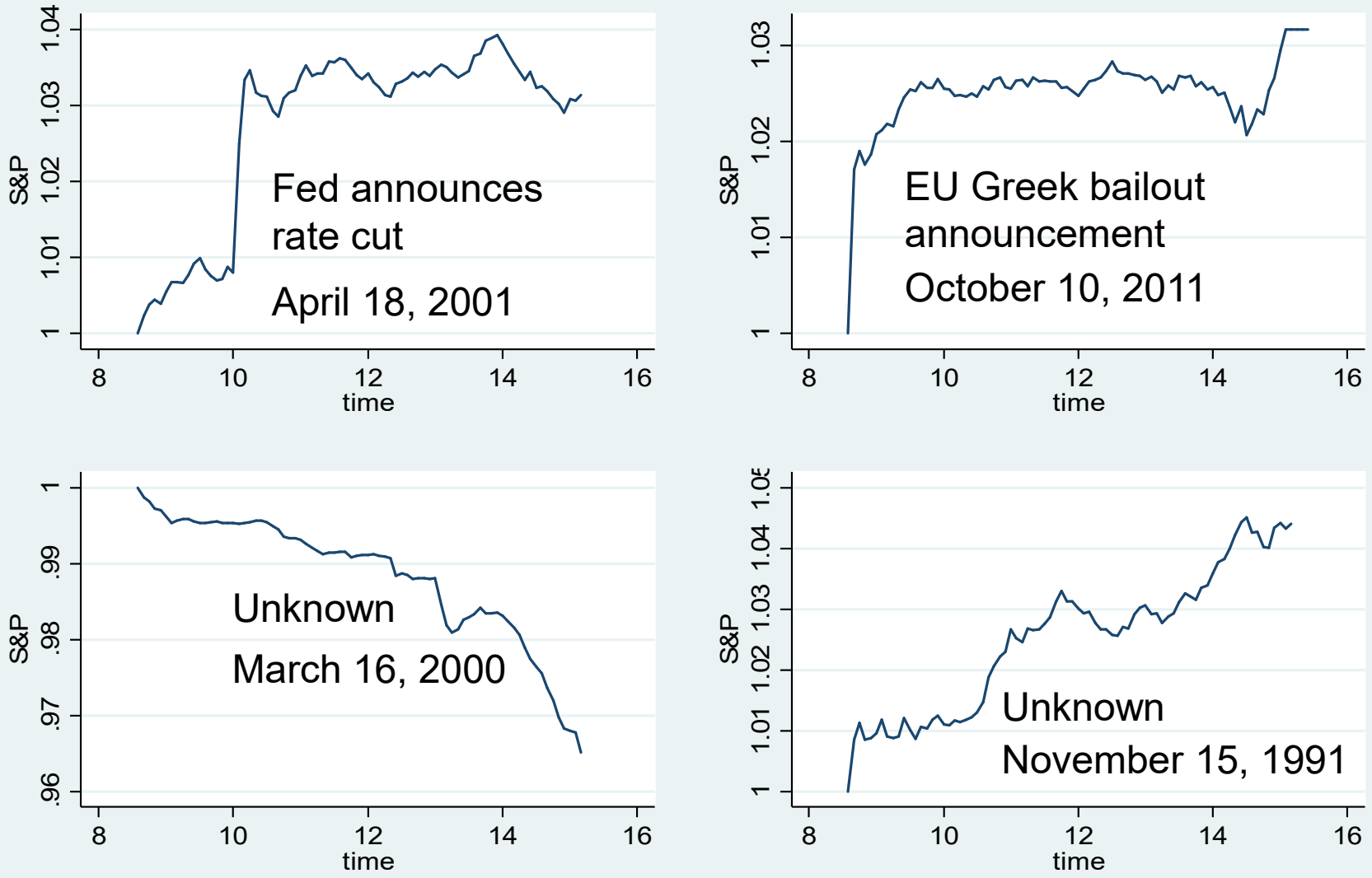
Data: Validation

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.

Jump Categories Correspond to Events

	Dependent Variable: Indicated Jump Coding x 100				
	(1) Monetary Policy		(2) Macro	(3) Elections	# Known
	81-93	94-2016	66-2016	29-2016	Dates
FOMC Meeting Date	1.39**				159
or Next Day	(0.693)				
FOMC Press Release		3.65***	0.59	0.14	215
Date		(1.309)	(0.590)	(0.277)	
CPI or Employment	0.190	0.06	1.01**	-0.10***	827
Situation Release Date	(0.499)	(0.297)	(0.455)	(0.020)	
Day After National	0.620	-0.64***	2.29	5.04**	49
Elections	(1.038)	(0.241)	(2.246)	(1.992)	
Constant	0.19***	0.34***	0.83***	0.09***	
	(0.072)	(0.073)	(0.076)	(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

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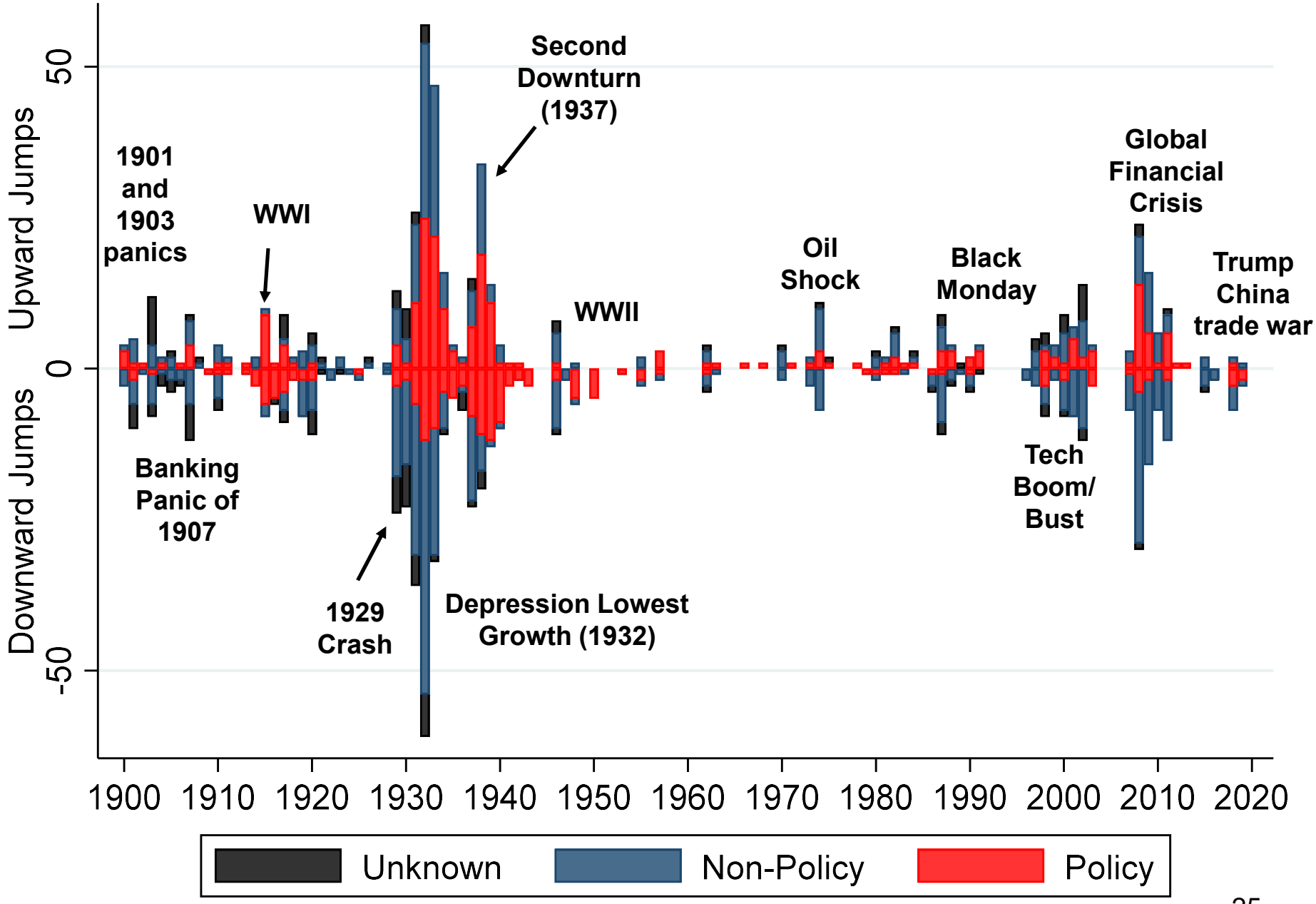
US Results: Implications of Different Jumps

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 (1900-2018)



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%**

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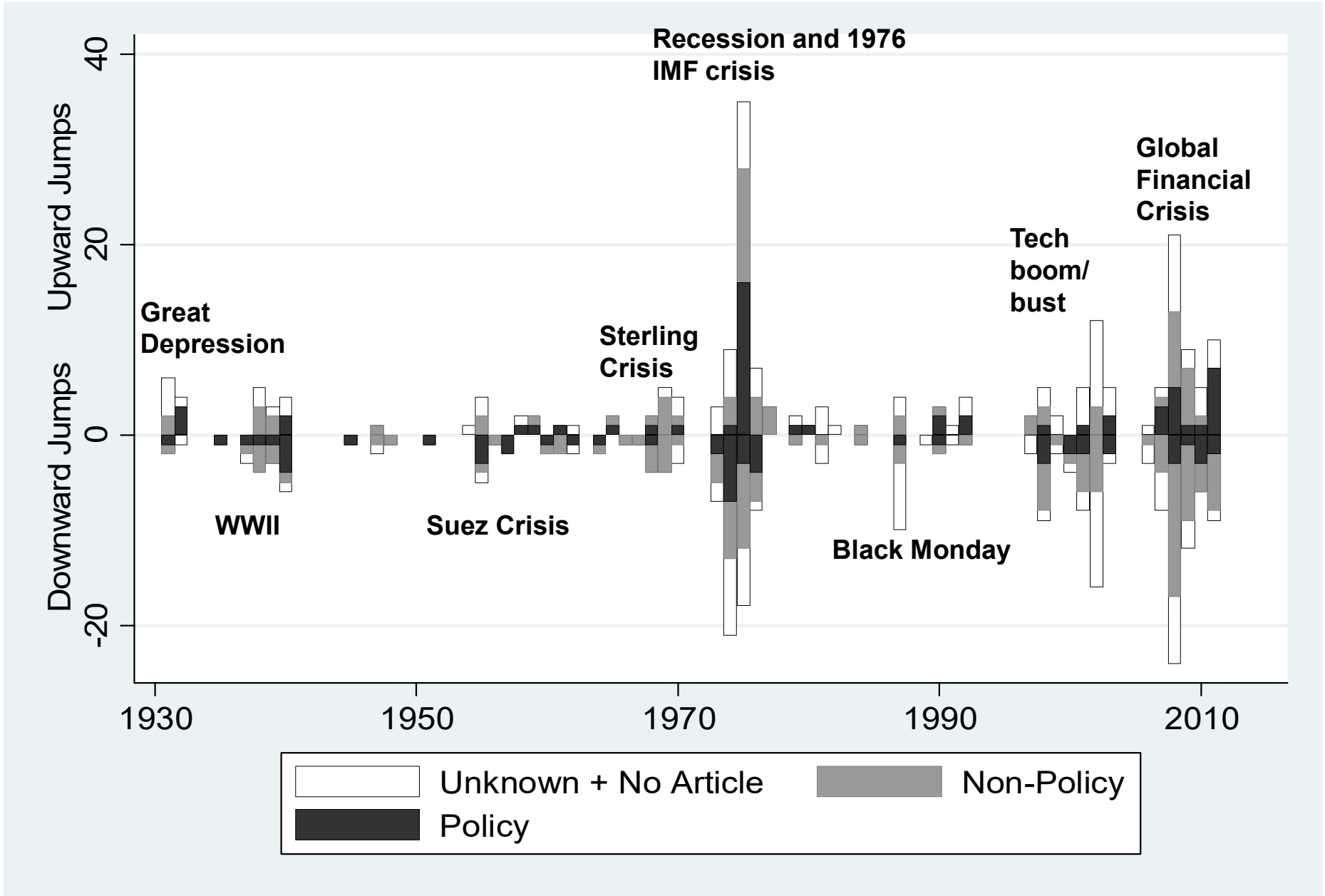
Global sample selects countries with active stock-markets and good on-line press archives

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 3% of trading days

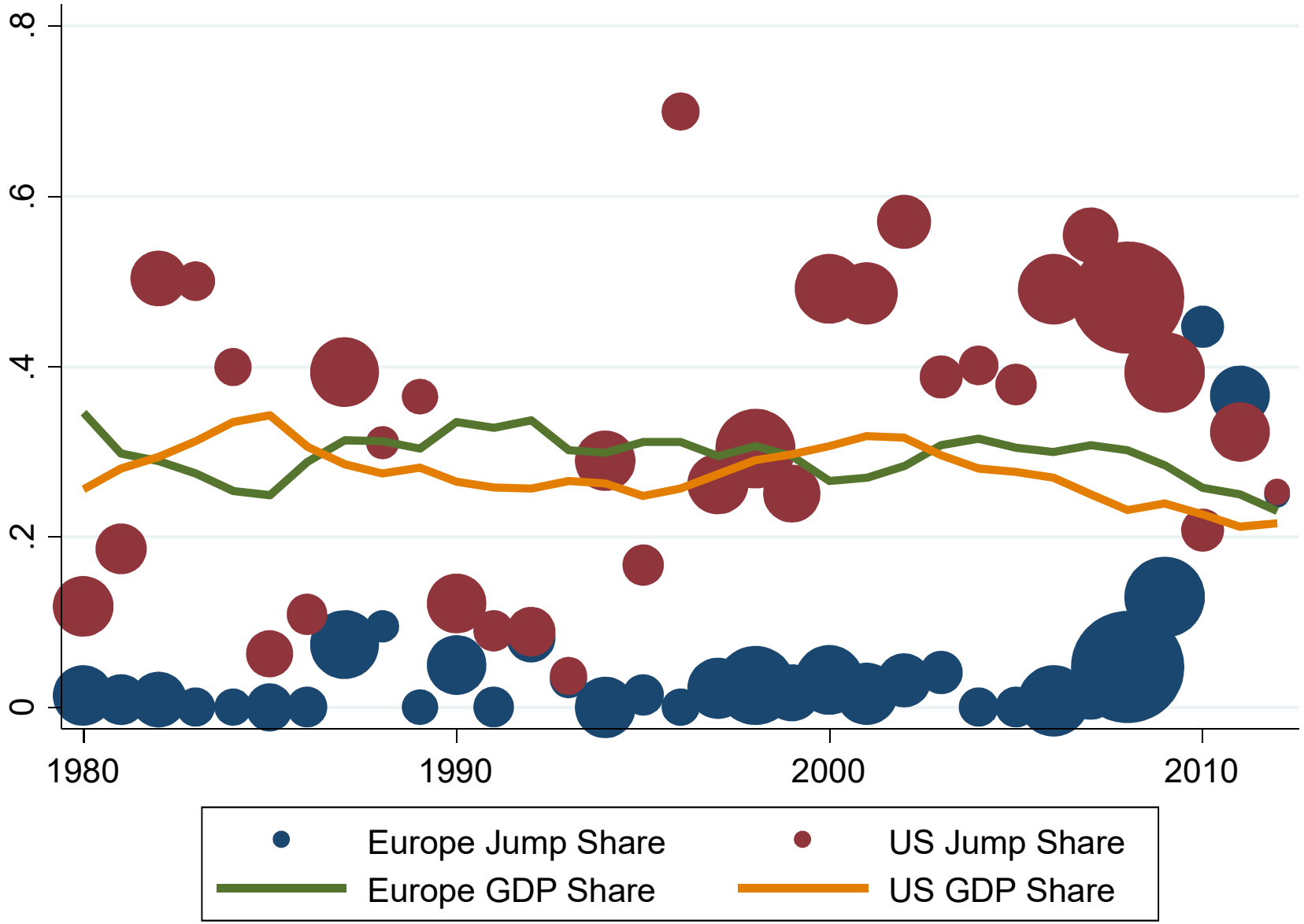
UK Jumps by Year (1930-2013)



Category Breakdown for International Data: 1980-2015

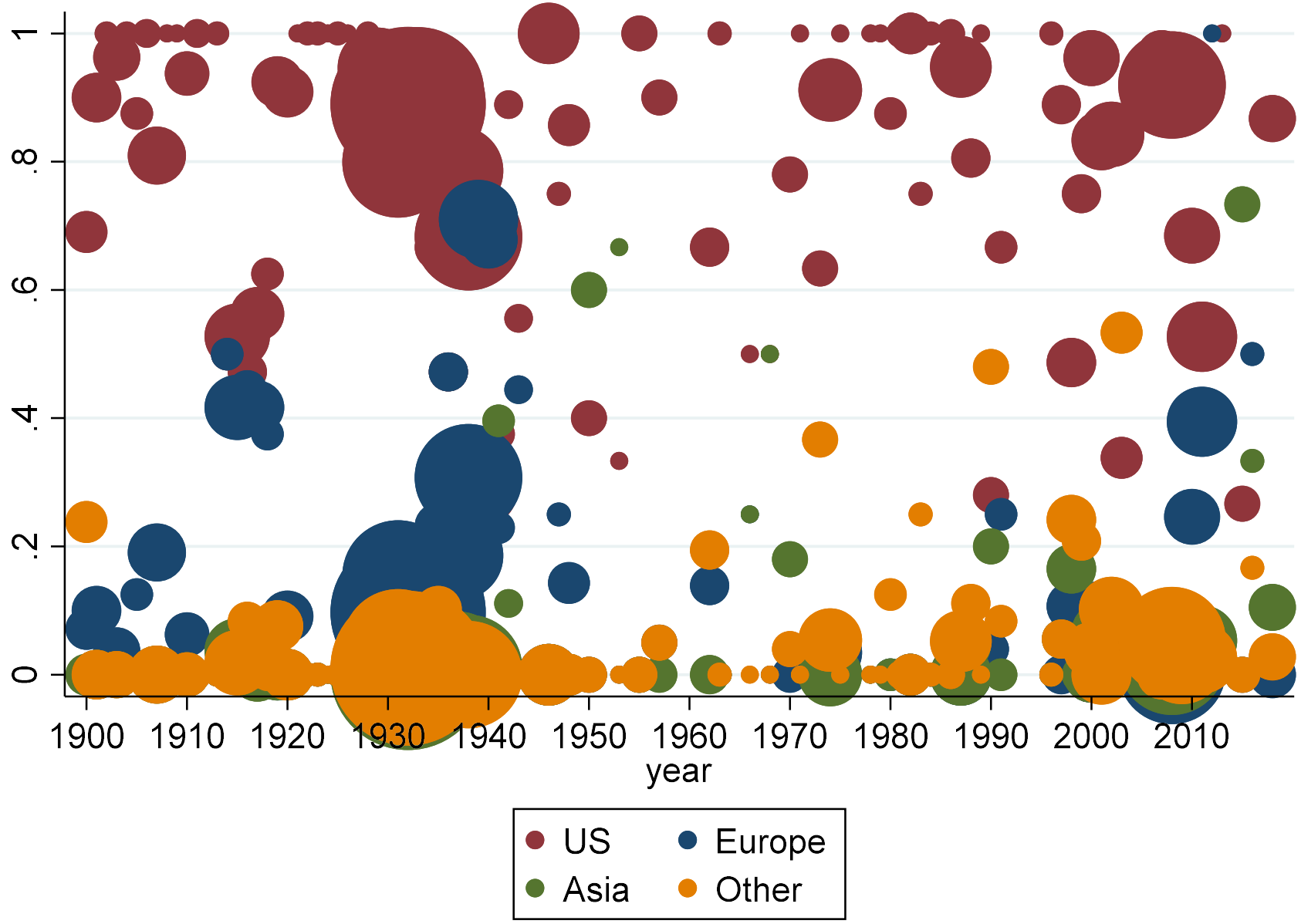
	International Data: 1980-2015		US Data: 1980-2015
	# Jumps	% Jumps	% Jumps
Macroeconomic News & Outlook	1014	24.6%	36.3%
Unknown & No Explanation	457	11.1%	12.0%
Corporate Earnings & Outlook	355	8.6%	14.5%
Sovereign Military & Security Actions	99	2.4%	3.7%
Monetary Policy & Central Banking	335	8.1%	12.7%
Government Spending	165	4.0%	7.9%
Commodities	180	4.4%	1.4%
Regulation	102	2.5%	0.8%
Other Non-Policy (Specify)	452	11.0%	2.8%
Elections & Political Transitions	79	1.9%	1.8%
Other Policy (Specify)	180	4.4%	1.5%
Taxes	19	0.5%	1.3%
Exchange Rate and Trade Policy	29	0.7%	0.8%
Foreign Stock Markets	501	12.1%	1.1%
Terrorist Attacks	50	1.2%	1.5%
No Article Found	109	2.6%	0.0%

US news accounts for large share of global jumps



Notes: Share of US source of stock-market jumps averaged over non-US countries by year: Australia, Canada, China (HK), China (Shanghai), Germany, Greece, Ireland, Japan, New Zealand, Saudi Arabia, Singapore, South Africa, South Korea and UK. Dot size is proportional to the number of jumps by country/year. GDP share is "GDP (PPP) share of world total" from the IMF.

US news accounts for large share of global jumps



Outline

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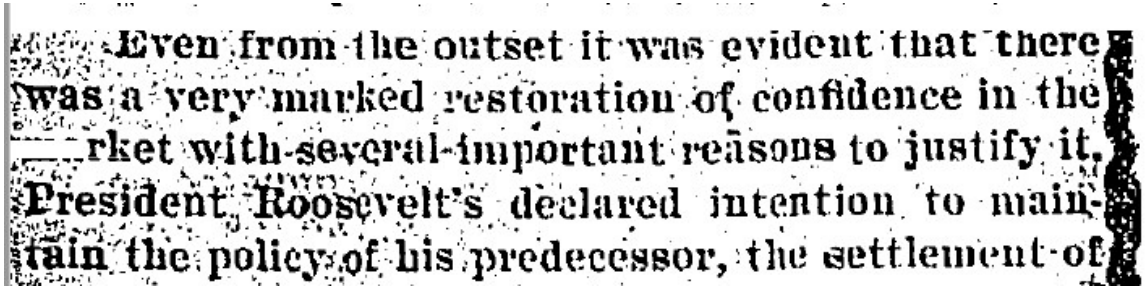
US Results: Implications of Different Jumps

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

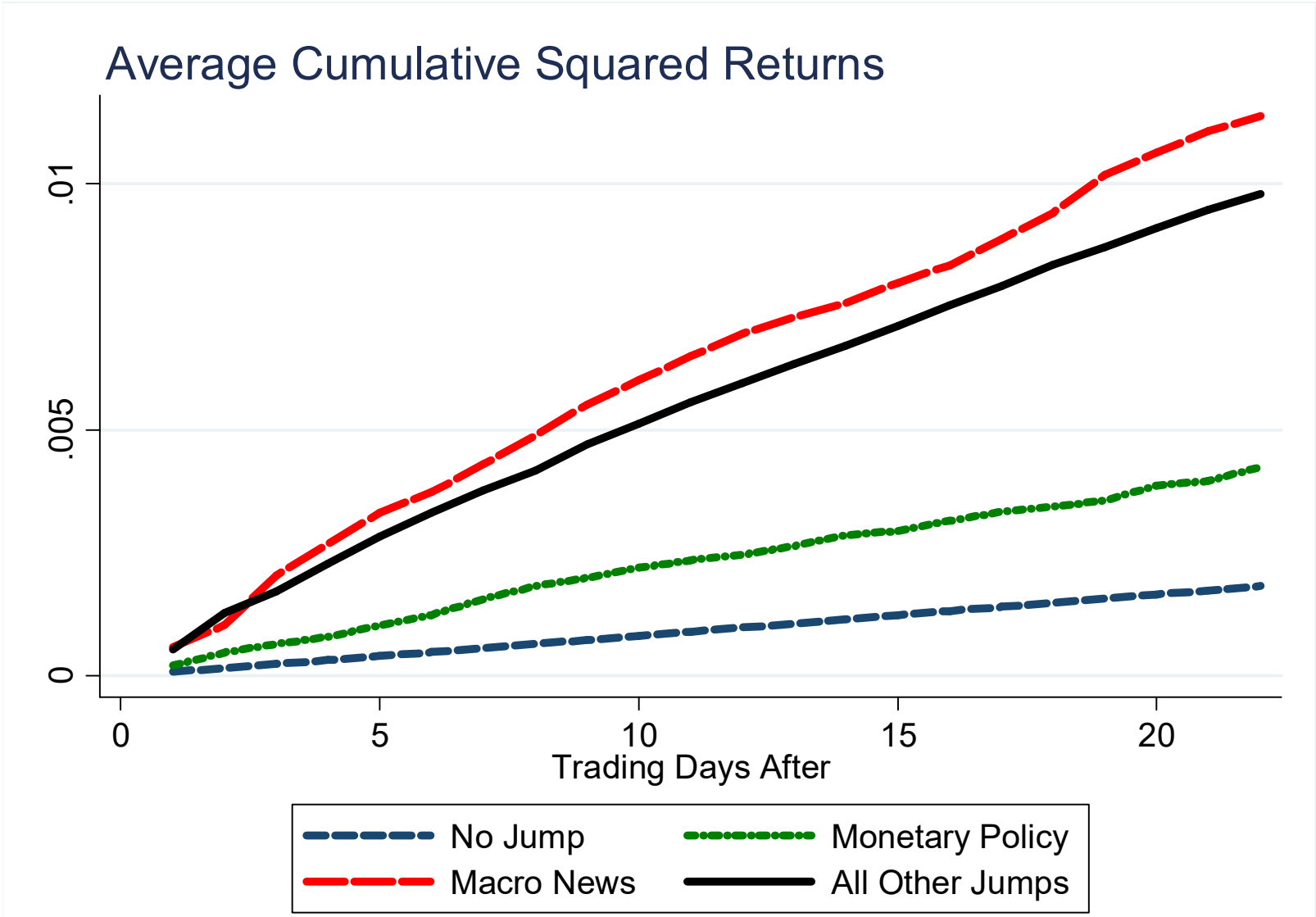
- Some jumps are caused by an increase in uncertainty (3/22/2018, -2.52%)

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%)


Even from the outset it was evident that there was a very marked restoration of confidence in the ——rket with several important reasons to justify it. President Roosevelt's declared intention to maintain the policy of his predecessor, the settlement of

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

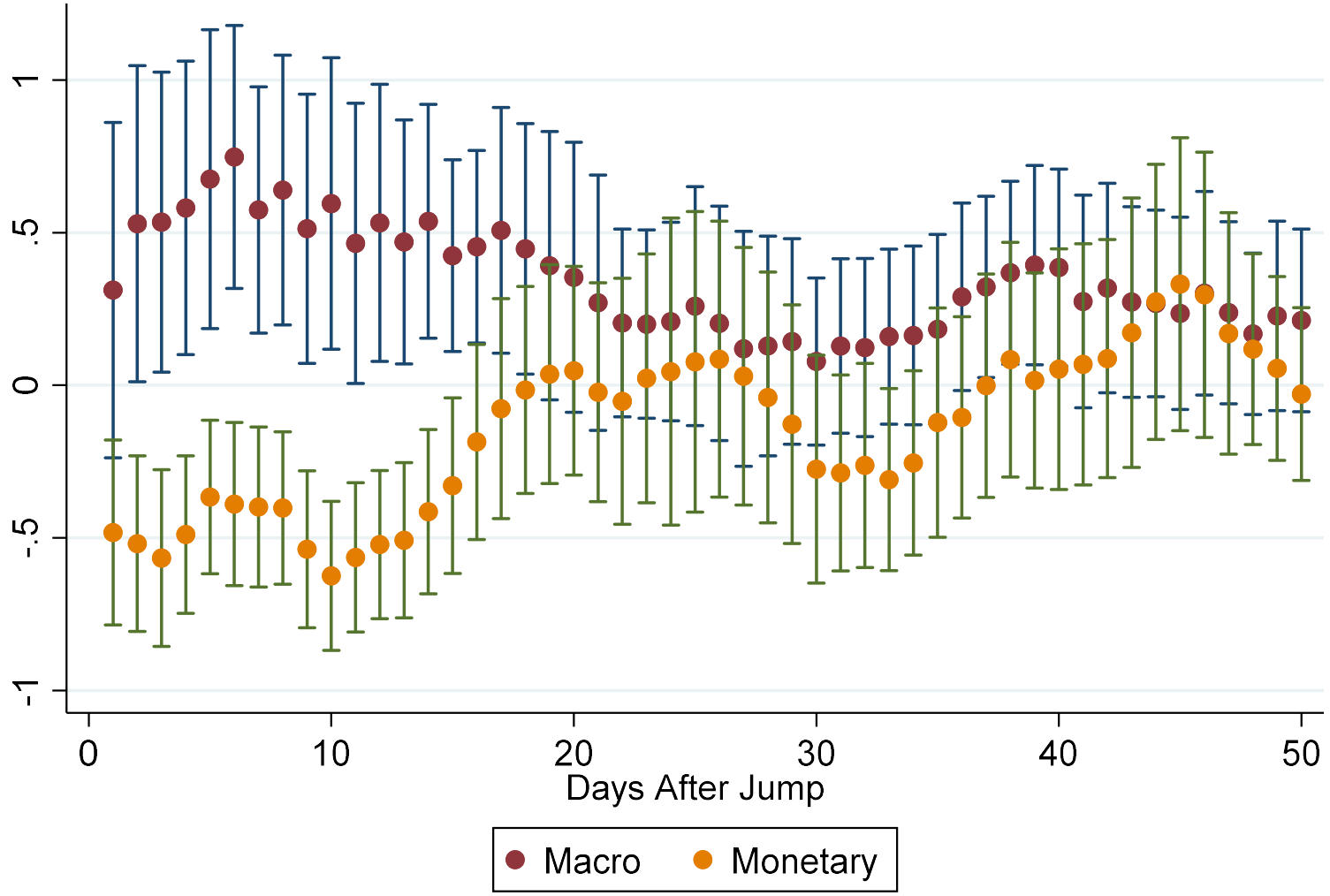
$$\underbrace{\sum_{i=n-2}^{n+2} \frac{r_{t+i}^2}{5}}_{\text{Avg. RV in Market from } t+n-2 \text{ to } t+n+2} = a + \underbrace{b\left(r_t \times 1_{r_t>0}\right) + c\left(|r_t| \times 1_{r_t\leq 0}\right)}_{\text{Return controls}} +$$

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

$$\underbrace{g\, macro_t + h\, monetary_t}_{\text{Coefficients of interest}} + \sum_{i=1}^{k} \beta_i\, category_i + e_t$$

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

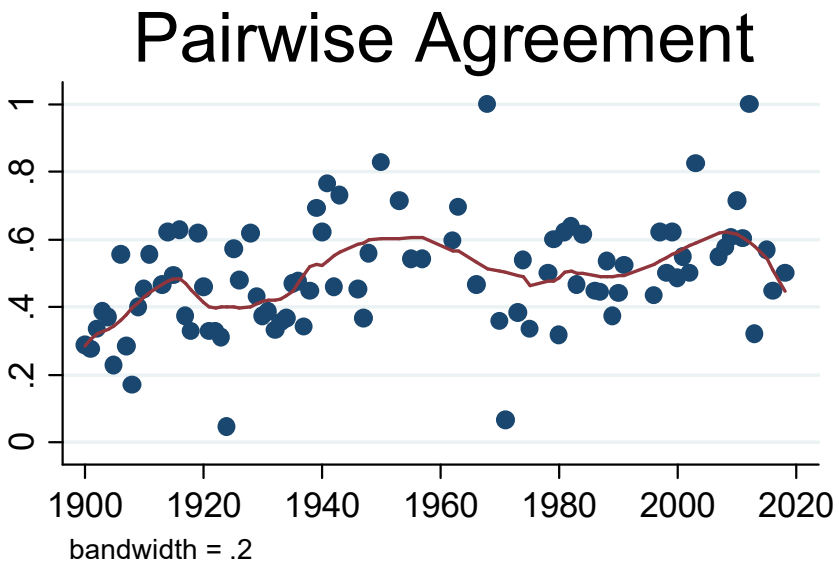
"Heavy selling was precipitated by the action of the Federal Reserve Bank of Boston in advancing its rediscount rate to 4% from 3.5%."

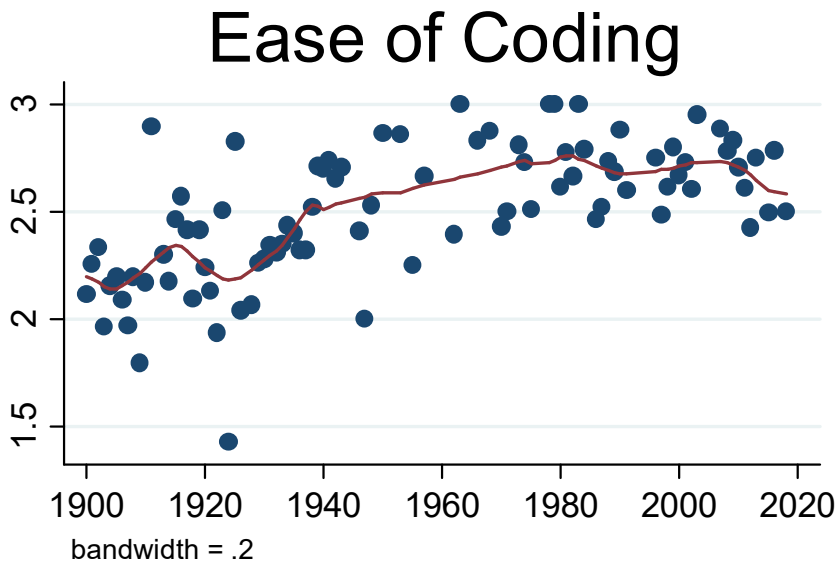
WSJ, 11/10/1925, -3.7%

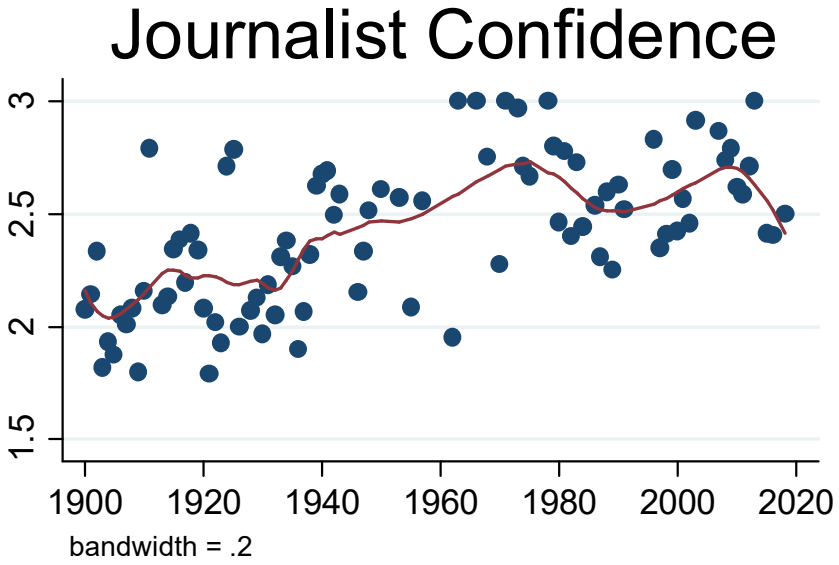
"There was nothing in the day's industrial and business news to account for the severe drop, and Wall street generally regarded it as due to an acute case of nerves."

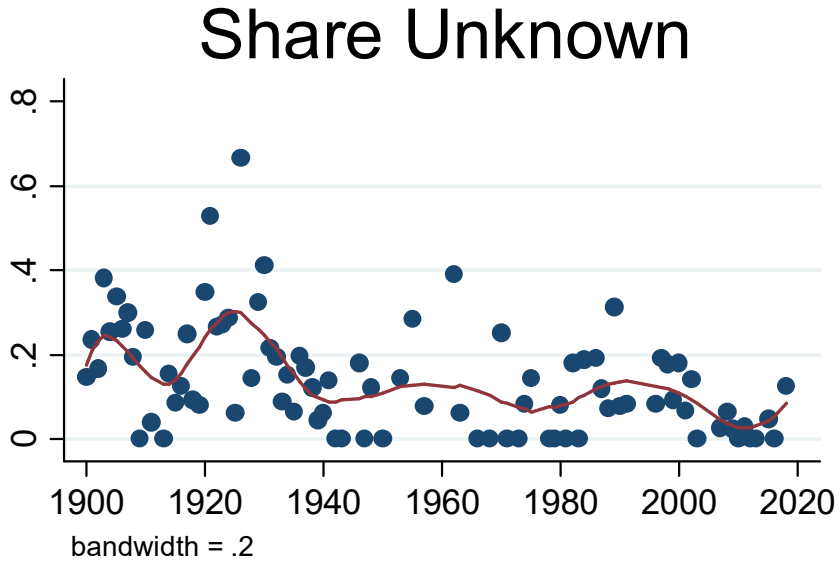
WSJ, 10/19/1929, -2.7%

Four Measures of Jump "Clarity"

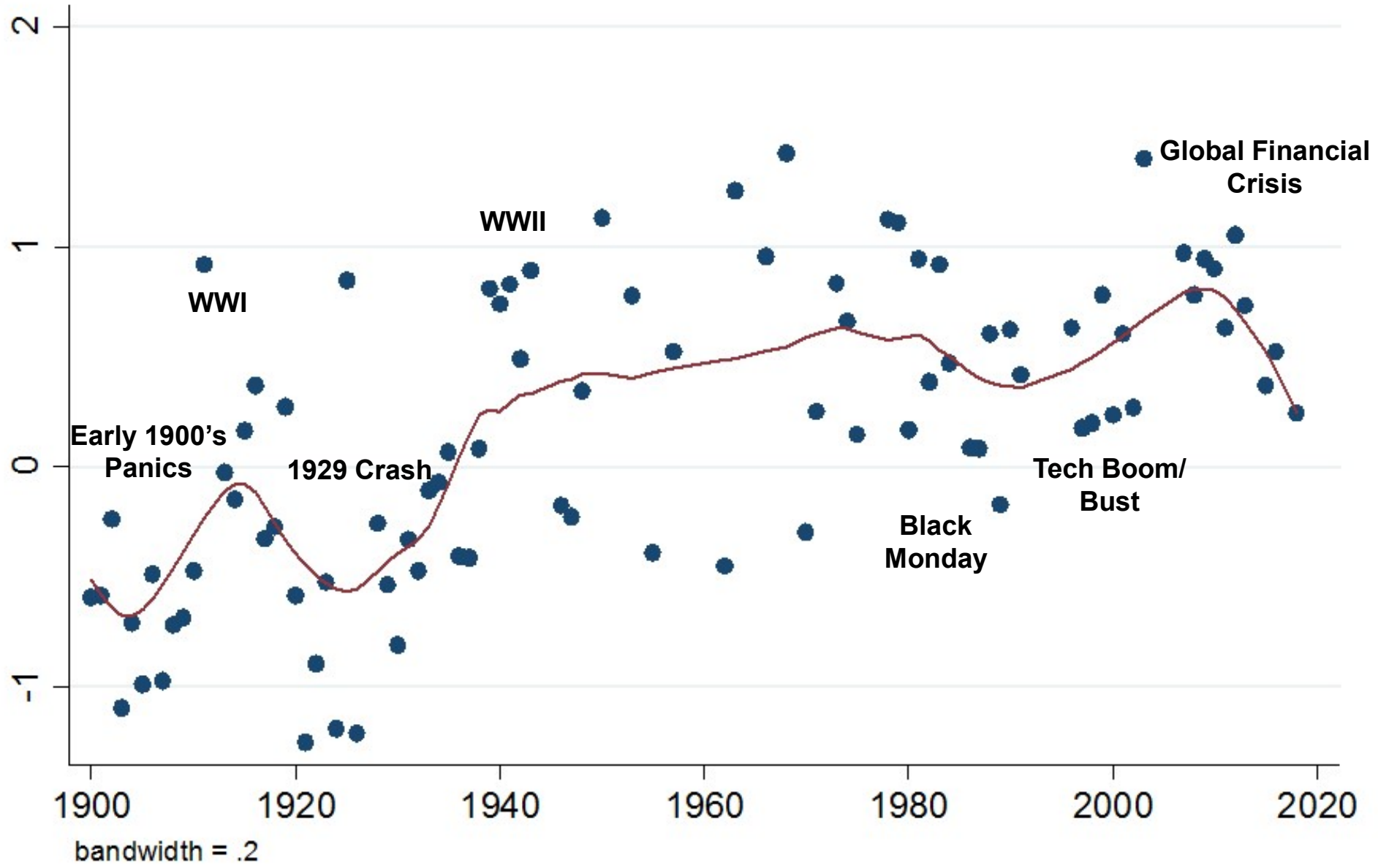








Clarity Has Increased Over Time



STOCK COLLAPSE RIVALS PANICS: Sharper Declines Than in Times That ...
New York Times (1857-1922); Mar 15, 1907; ProQuest Historical Newspapers: The New York Times
pg. 1

STOCK COLLAPSE

Shar

U. P

Harr

Says He'd Hate to Name Him.

HE HIMSELF ISN'T

No Failures Yet, but Fears Are

each of these issues. E. H. Harriman's name was oftenest heard on the lips of thost who whispered confidentially to their friends what they understood to be the source of the selling that was demoralizing the market, completely routing the last vestige of a speculative long interest and enriching the bears.

Harriman was said to have been caught in a tight place, and to have been forced to sell vast amounts of Union Pacific as well as other Harriman stocks. This,

less demand for both.

Mr. Harriman was at his office until 5:30 o'clock. In the afternoon he held a number of conferences, one of them with H. H. Rogers.

Support Arranging for To-day.

What Harriman Says.

Mr. Harriman was seen in his office after the close of the market, and asked for his opinion of the cause of the situation which had developed in the Street.

"I would hate to tell you," was Mr. Harriman's reply, "to whom I think you ought to go for the explanation of all this."

Urged to give some hint of the source from which could be had the explanation of what had taken place on the Stock Exchange during the day, Mr. Harriman said:

"No, I cannot tell you. I would be criticised for doing so."

"Mr. Harriman," his interviewer said, "your name has been mentioned in connection with many rumors to-day. It has been reported that you have broken with Kuhn, Loeb & Co., ...een selling Union Pacific all day ...

... he replied. "I ... have not been selling.

Not All Bear Selling, He Observes.

Washington post - 10/21/1929

$3,000,000,000 LOST WHEN STOCKS CRASH

New York, Oct. 21 (A.P.).—The stock market suffered the swiftest and most hair-raising drop in recent financial history today, a sweeping decline far more drastic than anything yet experienced in this modern era of speculation, and astonishingly enough, practically all of it took place in the short space of a single hour.

Many Rush to Get Out.

The mild rally from Monday's low levels was not very reassuring, and when prices once more began to give way, traders rushed to get out of the market for what their shares would bring. Also, stop loss orders were uncovered in enormous volume.

There was nothing in the day's industrial and business news to account for the severe drop, and Wall street generally regarded it as due to an acute case of nerves. Steel produc-

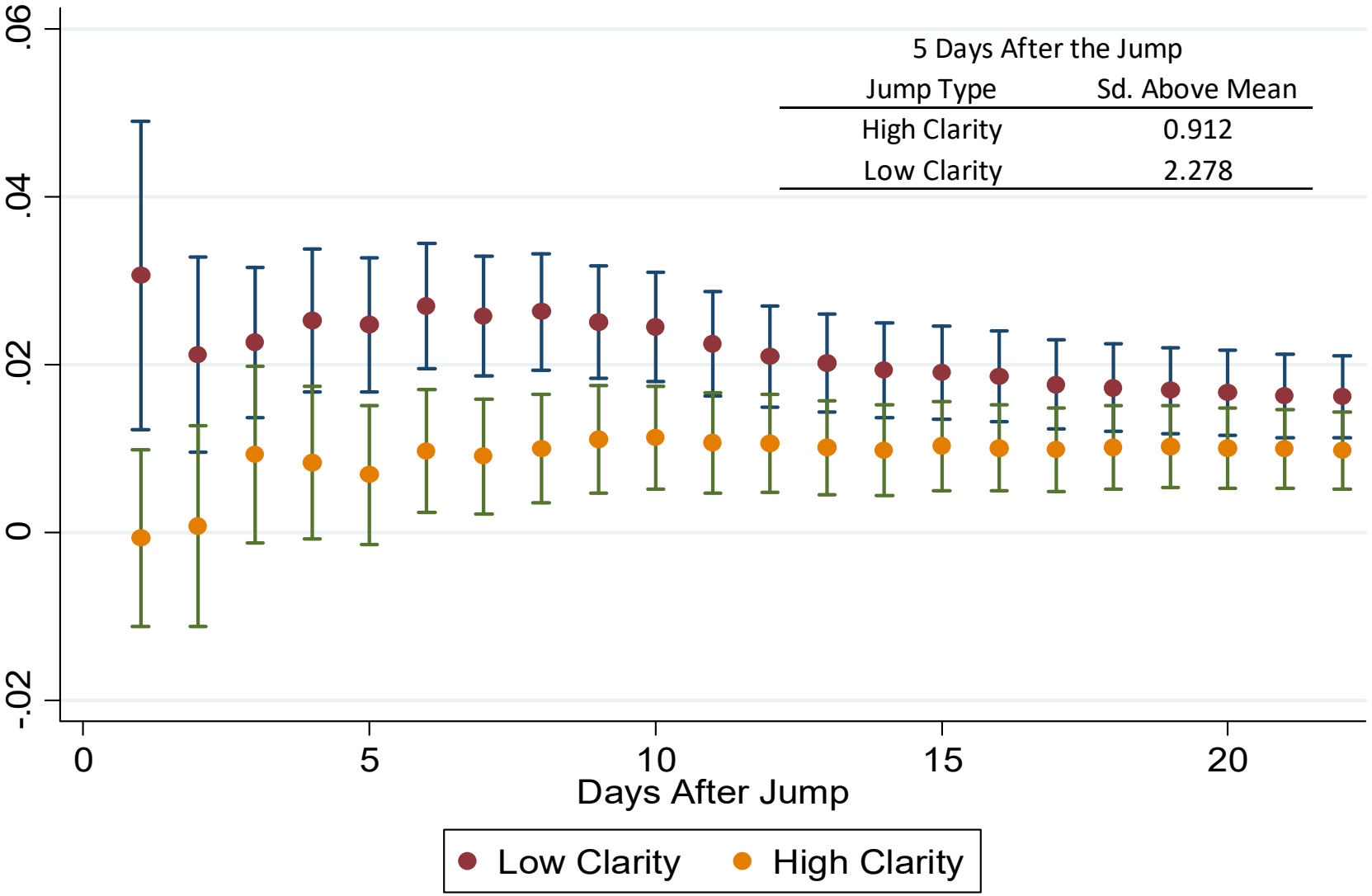
5/1/1931 (Washington Post)

STOCKS LOSE GAINS IN RUSH OF SELLING

Trade Reviews Discouraged.

The trade reviews seemed somewhat discouraged by the drag of weak speculative markets on sentiment. Rains and cold weather, said Bradstreet's, have retarded buying.

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.

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

What about Trump and Brexit?

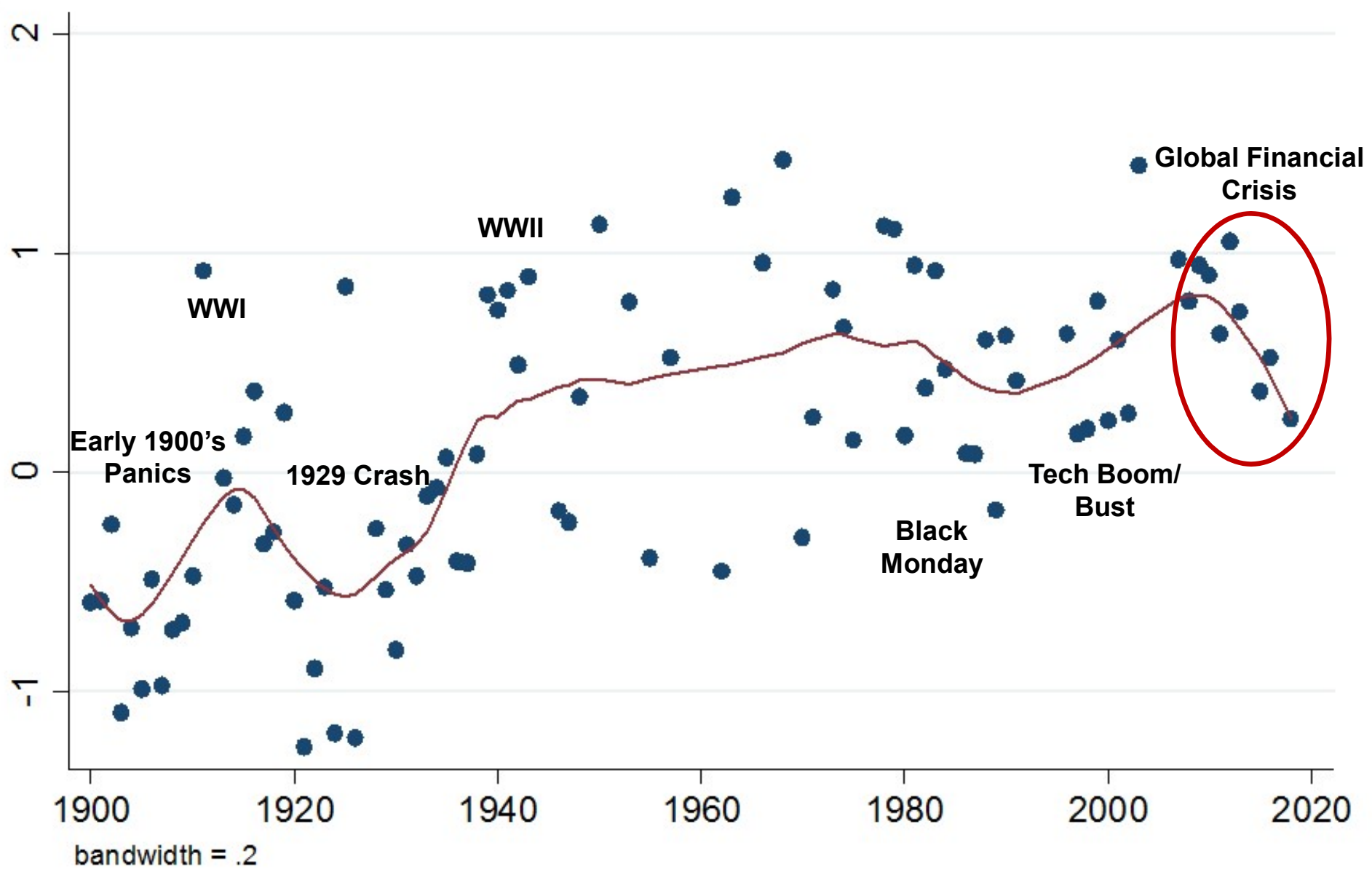
Recent Trump impact

Volatility (by this measure) is mildly higher since 2018: So far 13 jumps (compared to average 5.5 per year since 1945)

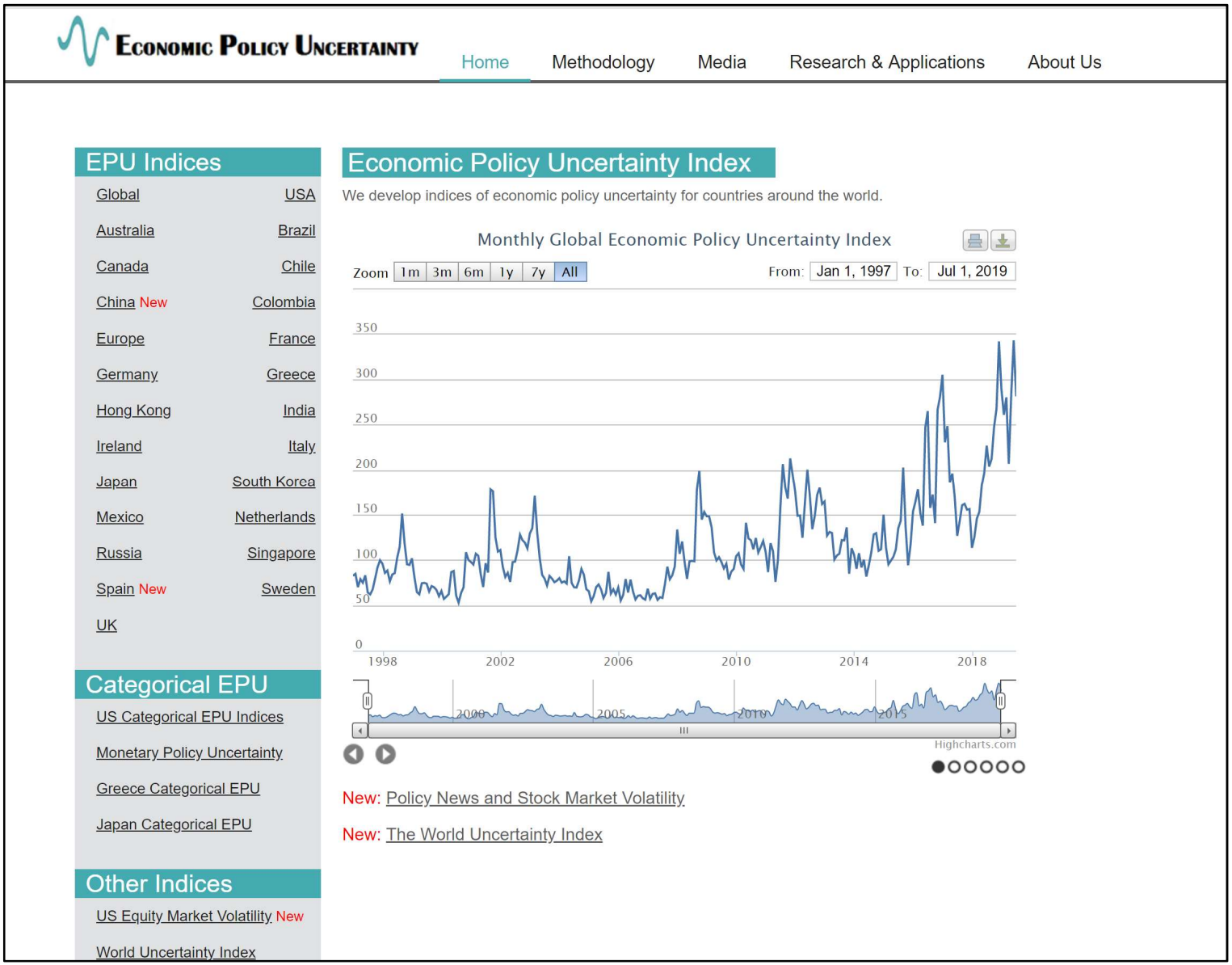
Trade Policy matters: 6 jumps in 2018/19 (compared to just 6 in total from 1900 to 2016)

Clarity is falling (after rising for many years): 2 of 13 jumps "Unknown" since 2018 (compared to average of 6% since 1945)

Clarity recently dropped: the Trump effect?



Policy uncertainty is currently very high (US, EU and China all high)



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 – above 20% US GDP share – especially high in GFC

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

Next Steps:

- Move threshold down to 2% in the US (2x number), add countries
- Supervised machine learning analysis trained from our articles
- Use jump causes to identify shocks in macro-VAR
- Post data for use

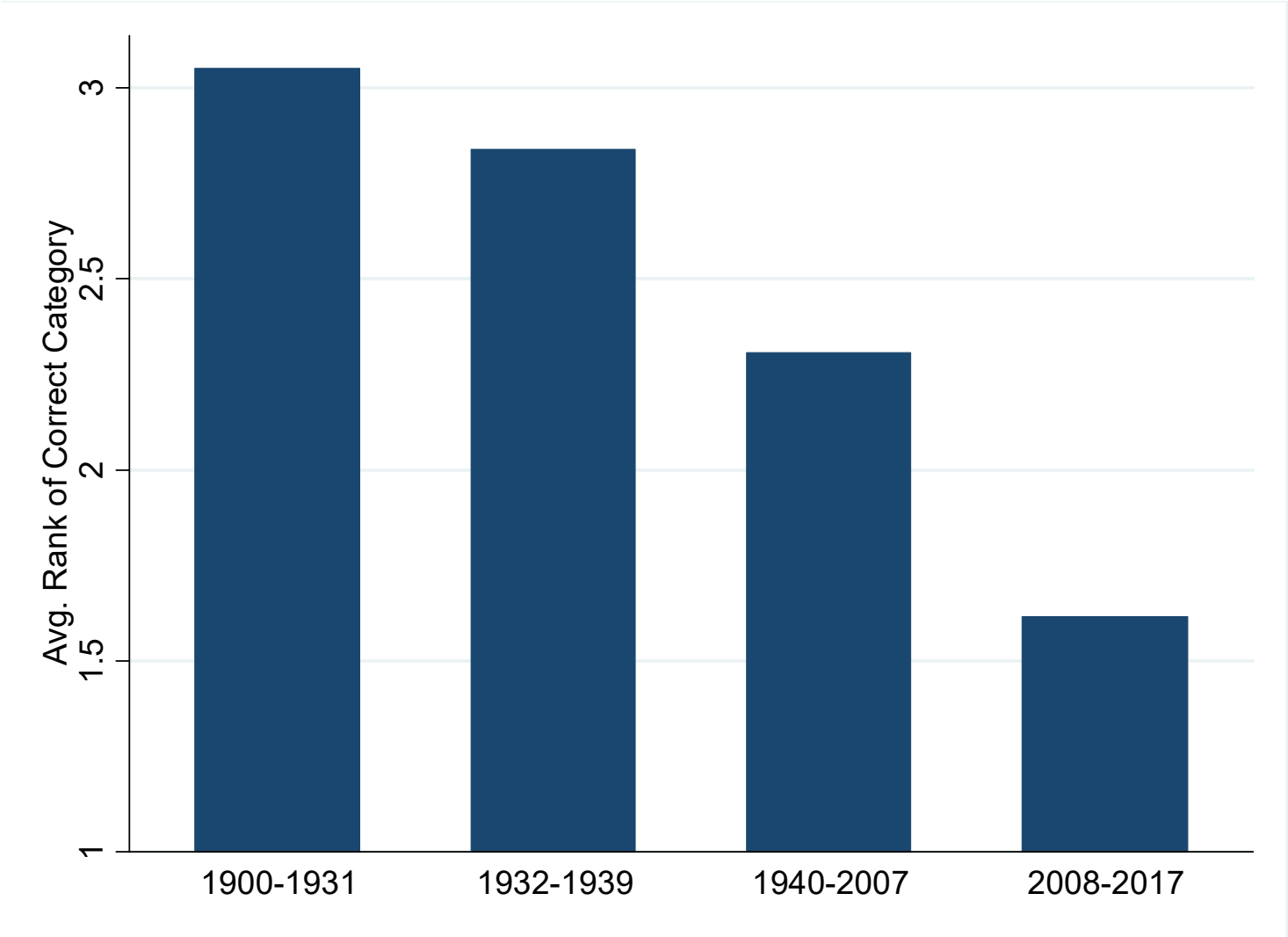
What Moves Stock Markets?

Scott R. Baker (Kellogg, Northwestern)
Nick Bloom (Stanford)
Steven J. Davis (Chicago Booth)
Marco Sammon (Kellogg, Northwestern)

Vi, August 2019

Back Up Slides

Algorithmic Categorization is More Accurate Over Time



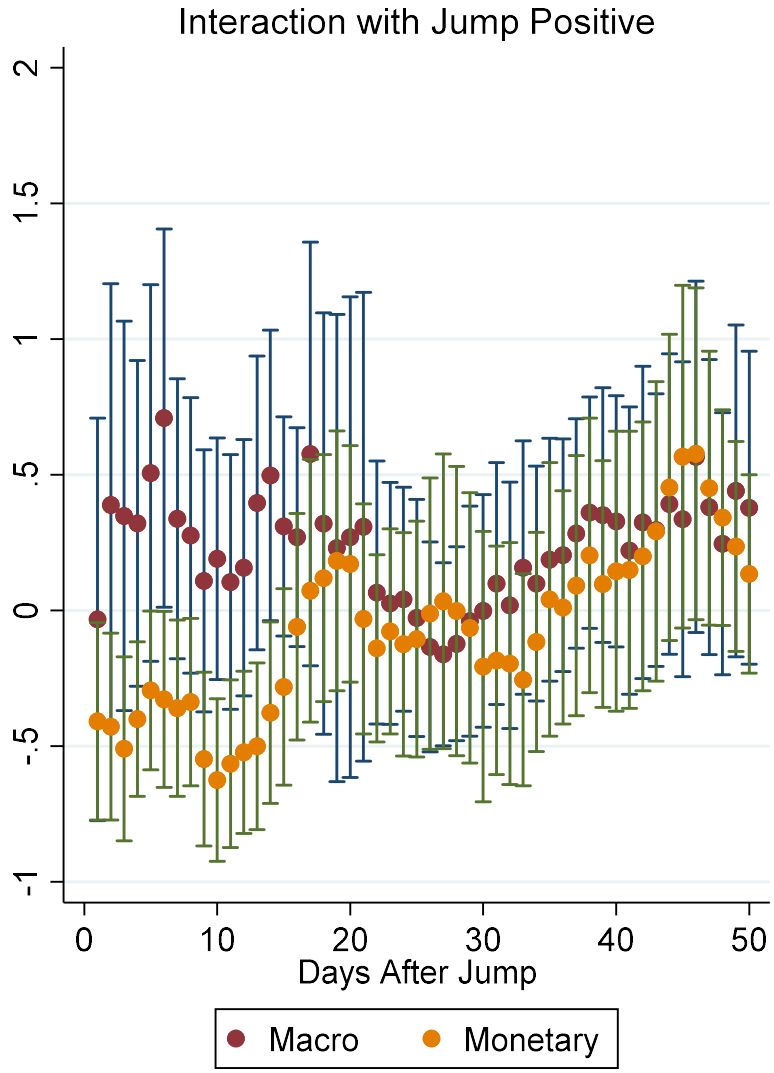
Notes: 275 jumps in each period. After cleaning/stemming articles 3K unique words remain. Take top 100 words for each category, then add up tf-idf scores for each word for each category in each article. To clean the articles, we take the first 200 words in the article, require words appear in a category 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.

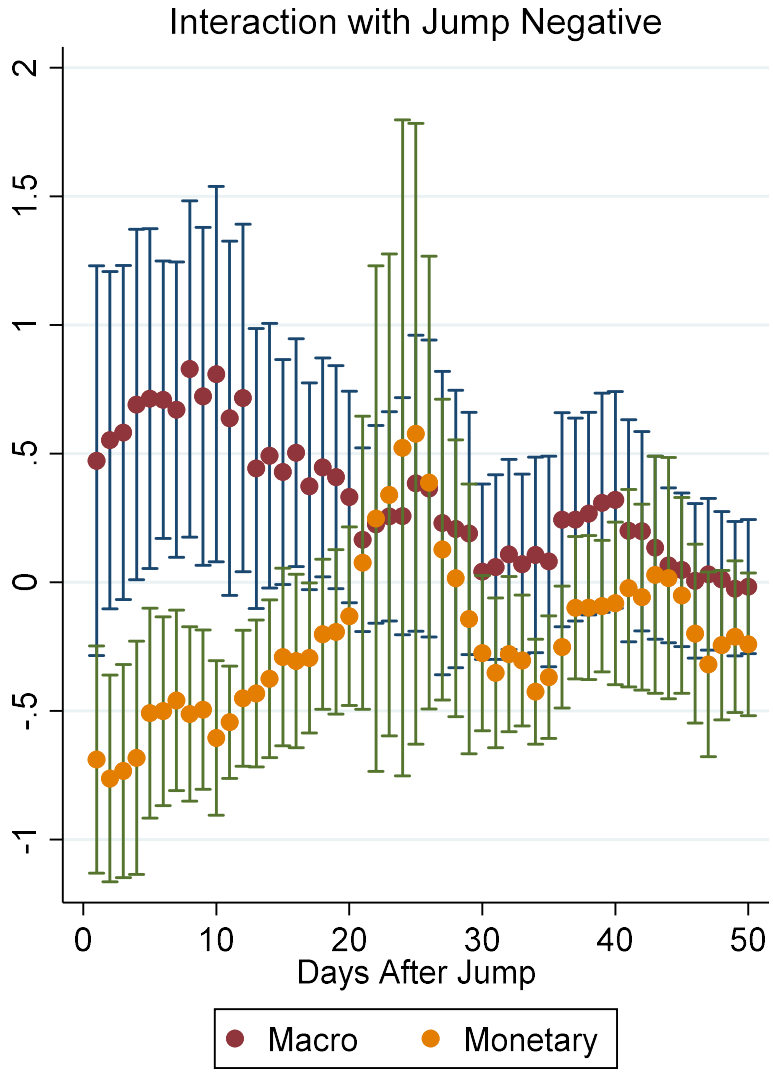
"Validation" of Clarity: lower intraday Vol & Volume

	Volatility	Reversals	Concentration	X-Sectional SD
Clarity [First PC]	-0.64***	-0.14***	0.44***	-0.16***
	(0.23)	(0.06)	(0.10)	(0.05)
Observations	276	276	276	912
R-squared	0.52	0.188	0.449	0.626
Return Controls	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES
Day of the Week FE	YES	YES	YES	YES
Implied Elasticity	-1.039	-0.232	0.706	-0.261

Notes: Clarity is the first principal component of: ease of coding, confidence, share of coders who agree (within/across papers) and share of "Unknown" codings. Volatility is the sum of squared 5-min returns in S&P 500 index from TickData. Reversals: # of S&P 500 cumulative reversals within the day (hourly frequency). Concentration is the share of the day's total absolute return that occurred in the 5-min window with the largest absolute return. X-sectional SD is the cross-sectional SD of returns for all firms in CRSP VW index. Sample spans US data, 1986-2018 for all except X-sectional SD, which is available 1926-2018. Elasticity is effect (in SD units) of moving from the 25th to 75th percentiles of the RHS variable. *** p<0.01, ** p<0.05, * p<0.1

Robust to Interaction with Positive/Negative Jumps

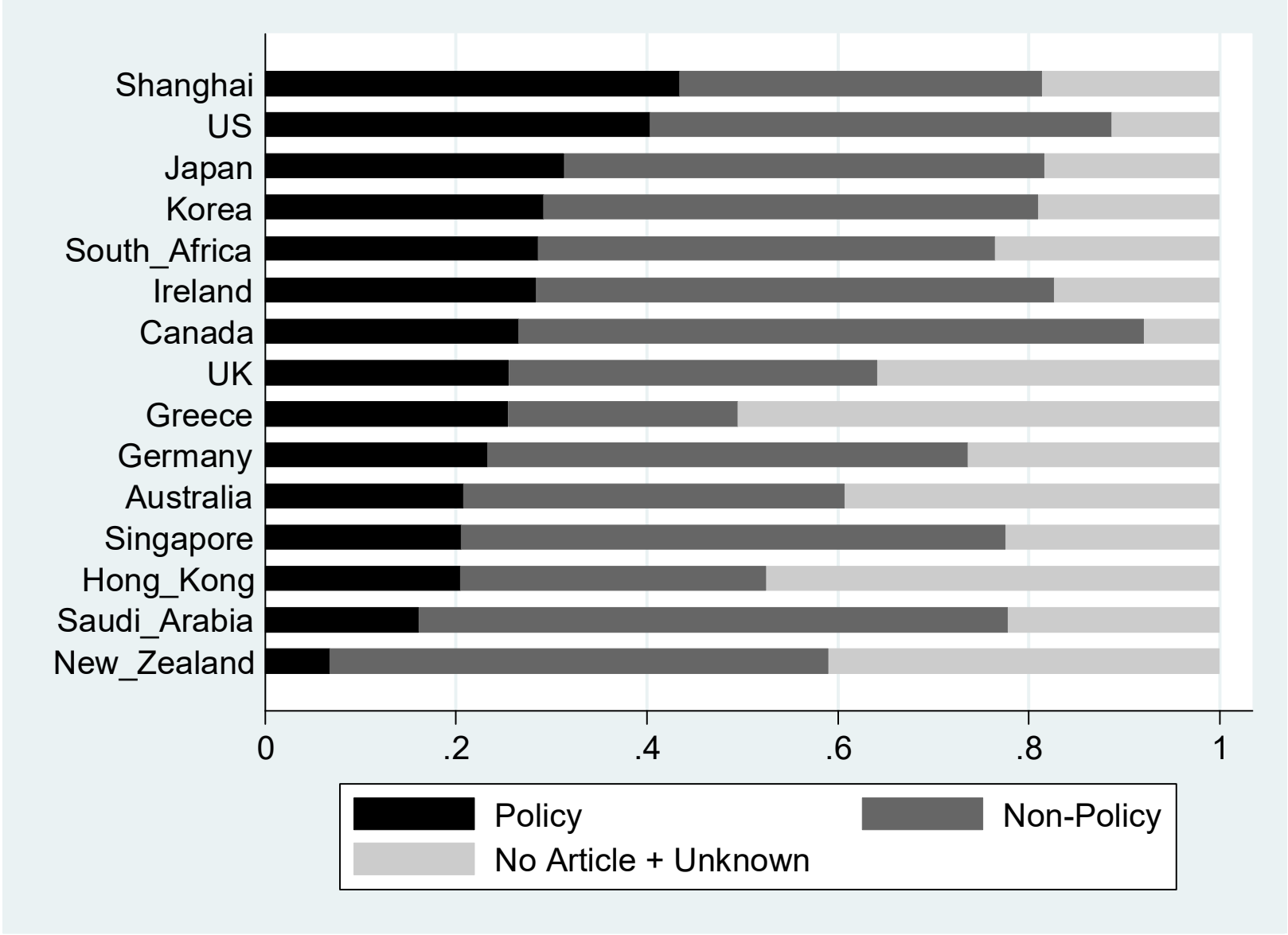




Bars represent a 95% confidence interval around the point estimate

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.

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).