

# The Calendar of Cash-Flow News

Claire Yurong Hong (HKUST), Jialin Yu (HKUST)

# Motivation

- Hard to empirically distinguish expectation error (behavioral finance) vs. variation in risk premium (rational asset pricing)
  - Eg., is value premium due to investors overly pessimistic on value stocks, or due to higher risk premium? The behavioral and rational theories have observationally similar implications on returns.
  - Lots of other examples
- Our idea: the timing of news about fundamental has a pattern
  - Expectation error---corrected when news about fundamental arrives---inherits the pattern
  - Changes in risk premium do not
  - This allows us to distinguish some of the behavioral vs rational explanations.

# Timing of news about fundamental

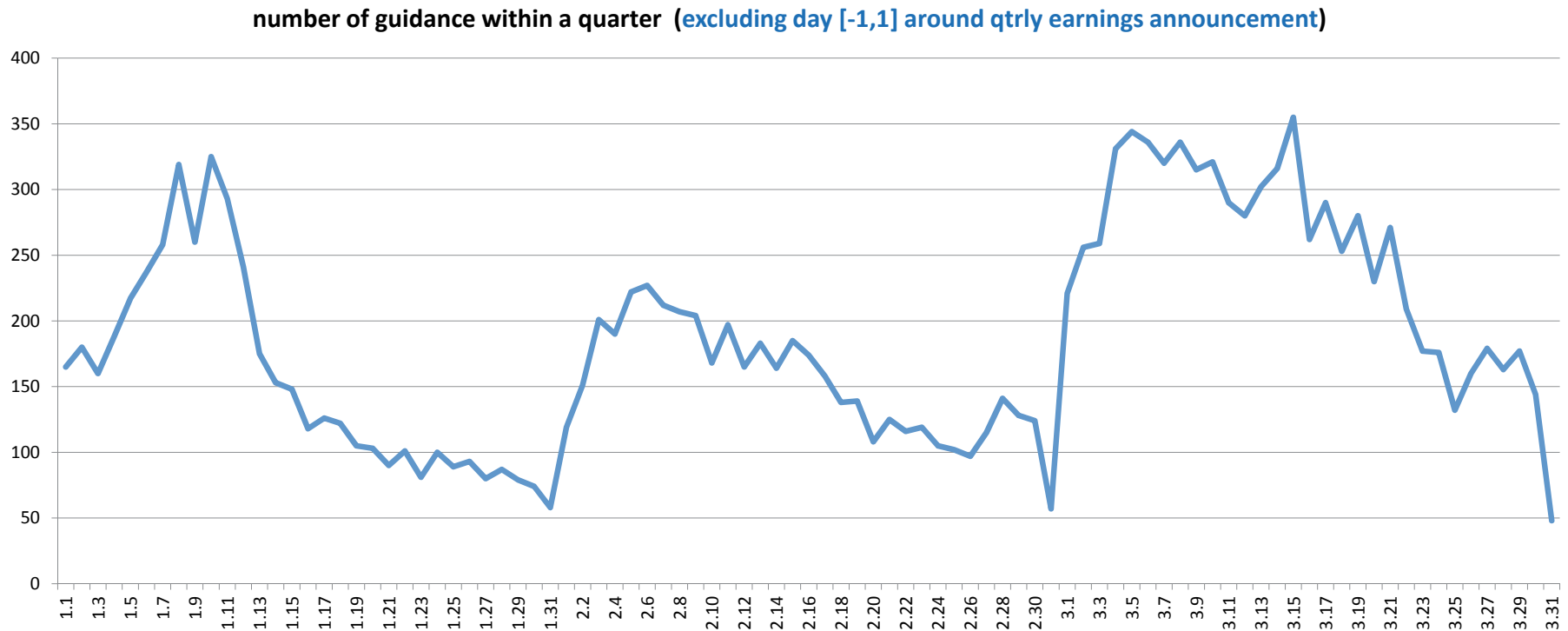
- Hypothesis on the calendar of news: If firms tally their bottom lines at the **month end** and stock prices react quickly, such news about fundamental is reflected in the stock returns **early next month**.
- Hypothesis on the calendar of expectation error: Expectation error—corrected when news about fundamental is reflected in the stock returns—is concentrated in the **early days of a month**.

# Clarification of assumptions

- We do not assume firms summarize P&L every month. Instead, we assume fiscal period end of internal/external financial report coincides with calendar month end. E.g.,
  - Firms with quarterly reporting (yes)
  - Firms with monthly reporting (yes)
  - Firms that only summarize P&L from day 18 a month to day 17 of next month (no)
  - Firms that summarize daily (no)
- We acknowledge there are other news about fundamental (e.g., wins a major contract in mid month). We just assume that these other news are randomly distributed over days in a month.
- That stock prices react quickly to information
  - Holds in the strong-form of information efficiency. Or if firms disclose the news quickly, holds in the semi-strong-form of information efficiency.

Evidence for the calendar of news

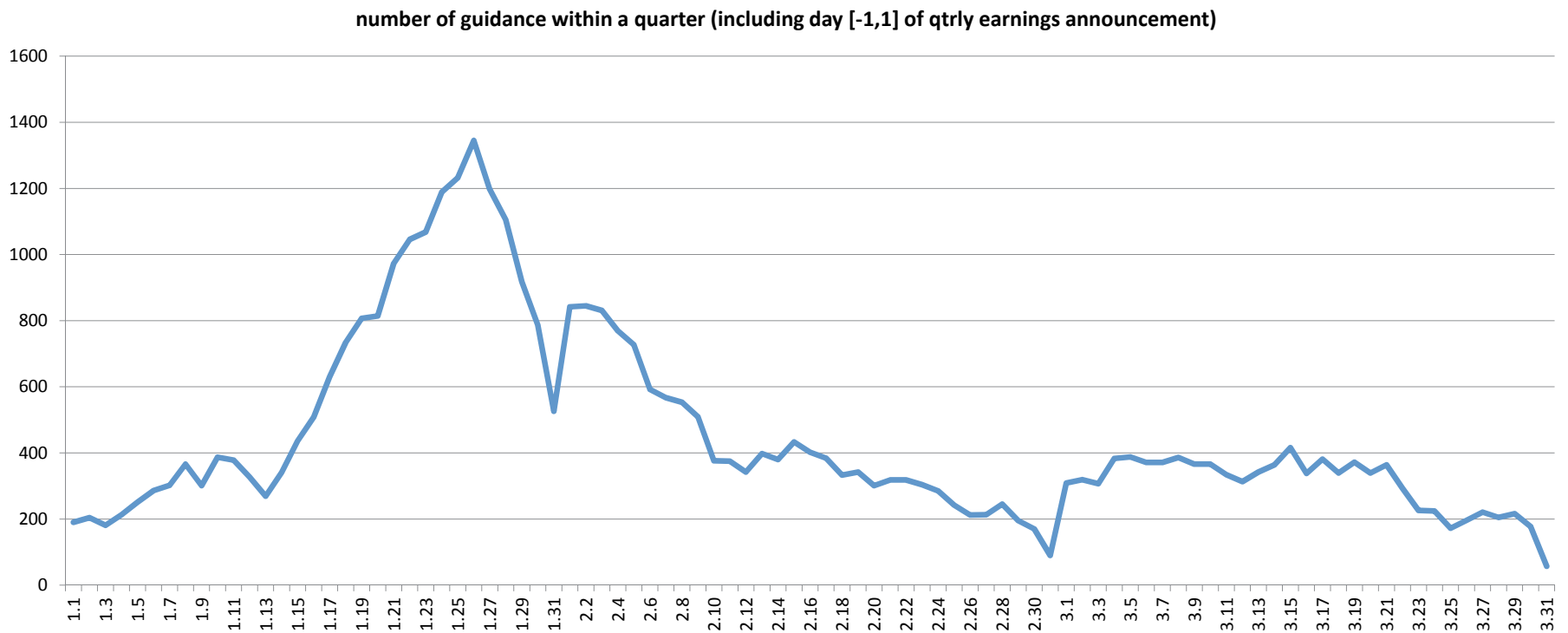
# # of management guidance



The **spike at the start of a month** is consistent with our hypothesis that news about fundamental comes out in early month.

IBES guidance data cover company issued guidance on EPS, net income, sales, CapEx, ROA, ROE, etc.

# Monthly vs. quarterly frequency



# Return implications

- Stocks with good news → high return in early month
- Stocks with bad news → low return in early month
- We use whole-month return to proxy news, assuming whole-month return = news + e, e is unrelated to the news.
- Testable implication:

$$(r_{Gt} - \bar{r}_G)\tau - (r_{Bt} - \bar{r}_B)\tau \quad \text{is high in early month}$$

- $r_{Gt}$ : average daily return between calendar day [1,t]
- $\bar{r}_G$ : average daily return in the whole month
- G, B: defined as top and bottom decile of whole-month return
- $\tau$  is # of trading days in [1,t]
- Subtract  $\bar{r}_G$  controls stock-month fixed effect in risk-premium variation. The long-short difference controls calendar-day fixed effect in market risk premium variation within a month. Multiply by  $\tau$  converts into cumulative return between [1,t]

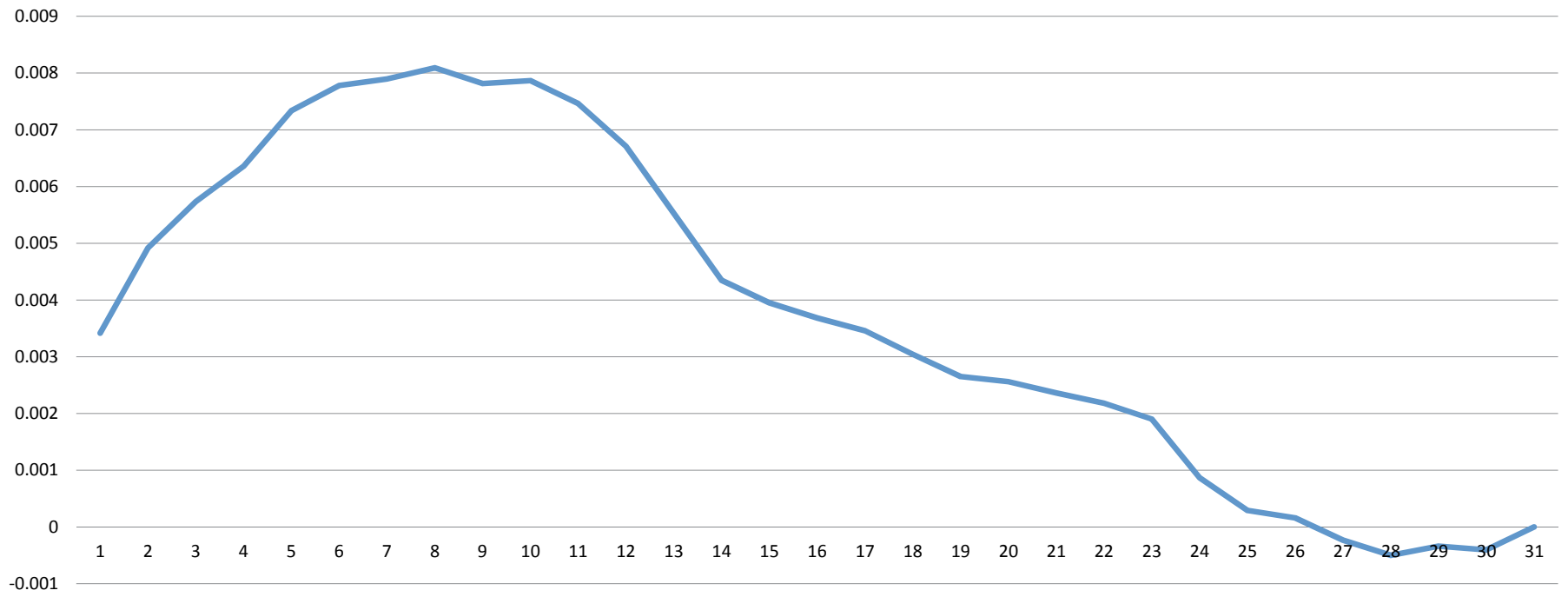


# 10 biggest stock markets

- US, China, Japan, UK, Canada, France, Germany, Australia, India, Brazil
- The results hold for both big and small stocks. We present results for big stocks in the slides. Small stocks typically have bigger magnitude than big stocks yet similar statistical significance.

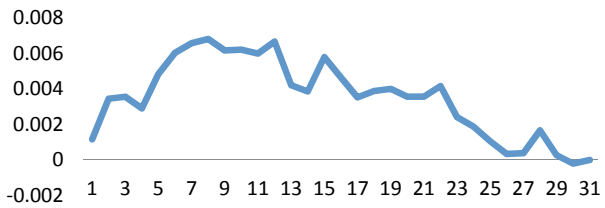
# US

US

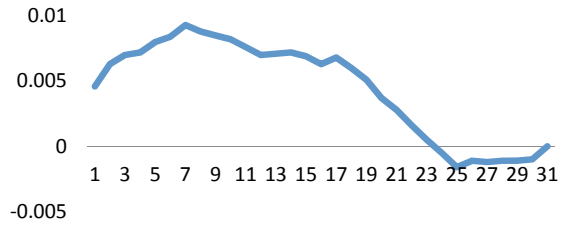


# Other countries

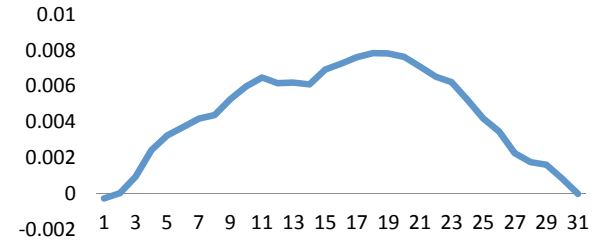
**China**



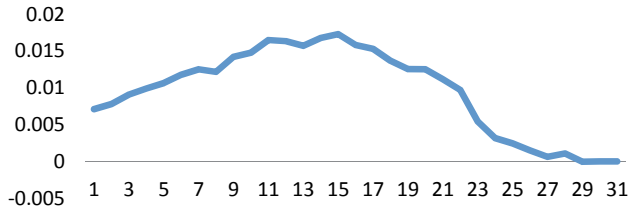
**Japan**



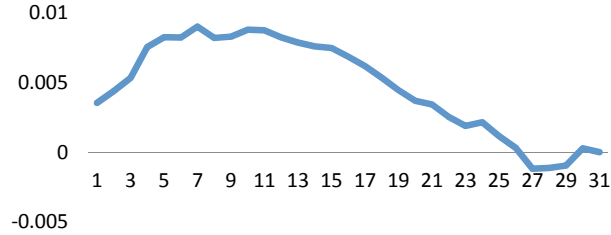
**UK**



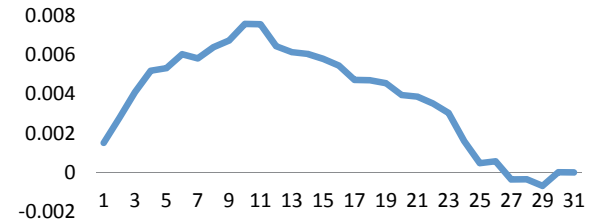
**Canada**



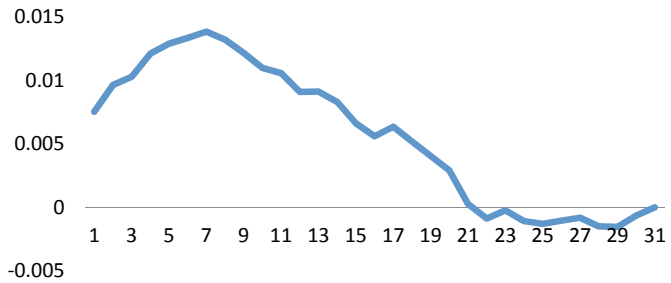
**France**



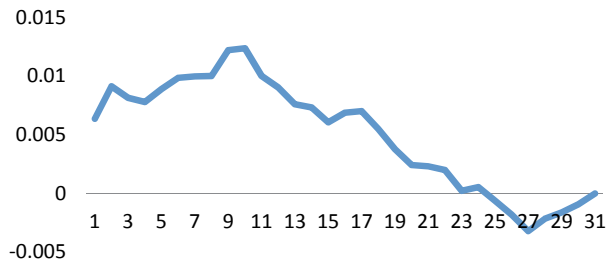
**Germany**



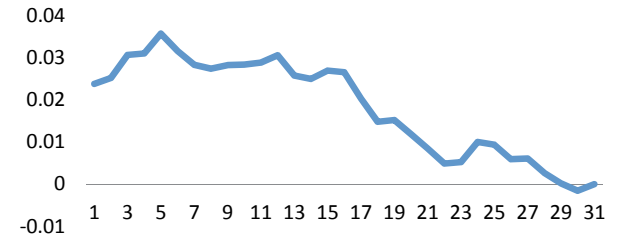
**Australia**



**India**



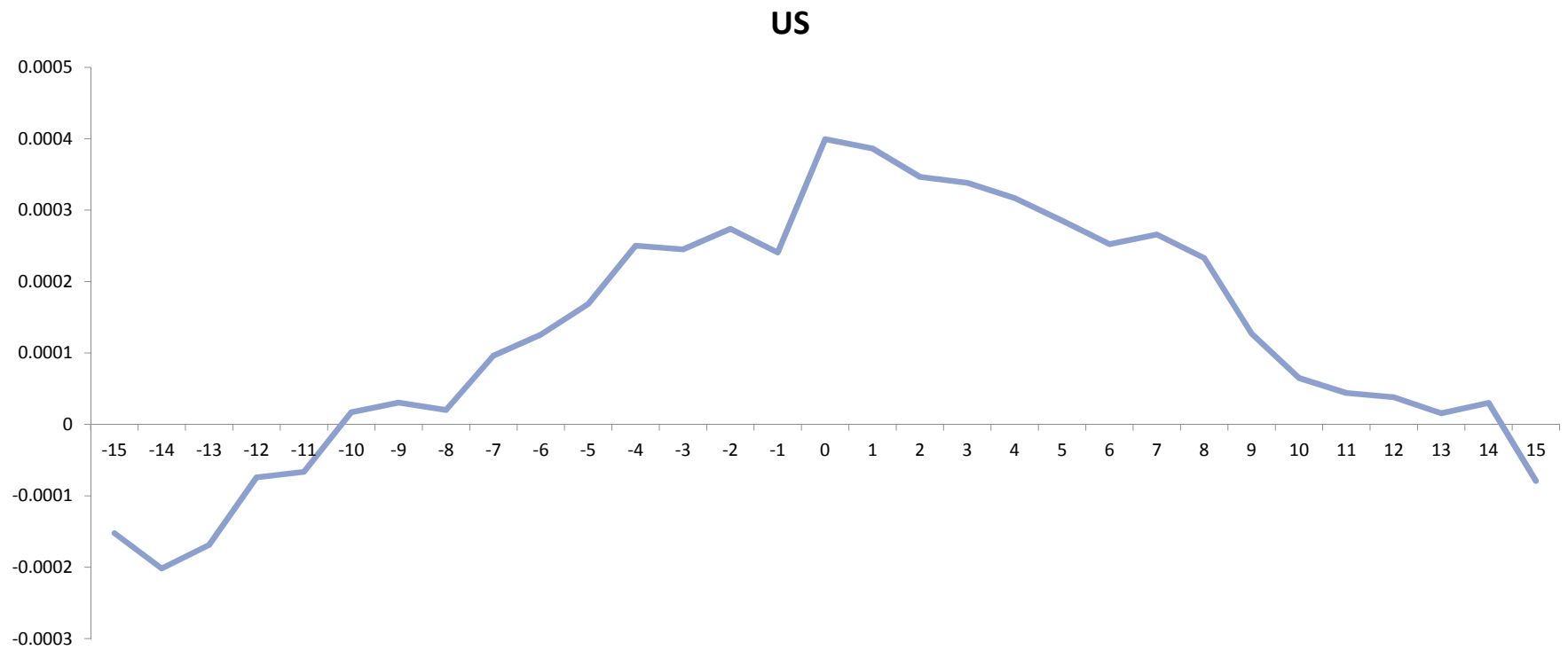
**Brazil**



# Placebo month

- Create fake month by shifting the calendar date by  $k$  days
  - E.g.,  $k=0$  is the calendar month,  $k=-15$  pretends the last 15 days in calendar month  $t-1$  and all but the last 15 days in calendar month  $t$  is a month,  $k=10$  pretends all but the first 10 days in calendar month  $t$  and the first 10 days in calendar month  $t+1$  is a month
  - Then repeat the previous analysis for  $k = -15, -14, \dots, 0, 1, \dots, 15$
- If the effect is from the beginning of a calendar month, the result should be the strongest for  $k=0$
- Set  $t=15$  (first 15 days) in  $(r_{Gt} - \bar{r}_G) - (r_{Bt} - \bar{r}_B)$  and see how  $(r_{G15} - \bar{r}_G) - (r_{B15} - \bar{r}_B)$  changes with  $k$ 
  - Other  $t$  gives results consistent with the hypothesis, too.

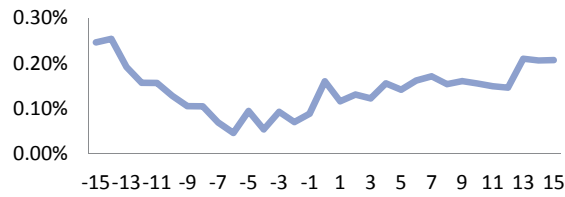
# US



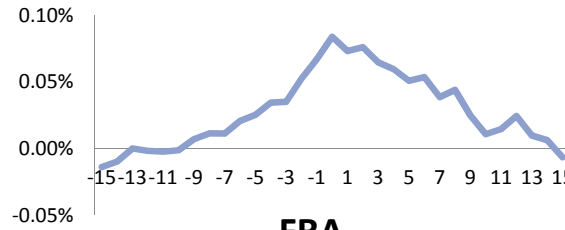
Peaks exact at k=0---the actual calendar month has the strongest effect

# Other countries

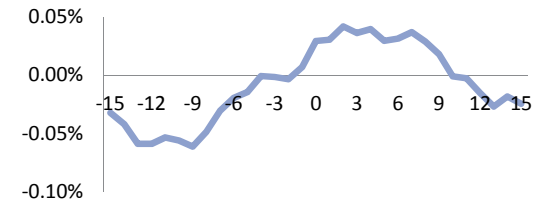
## China



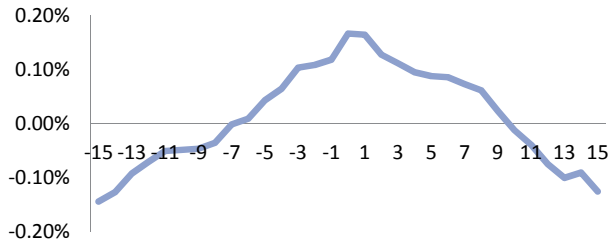
## Japan



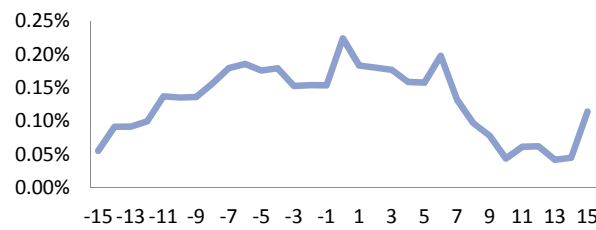
## UK



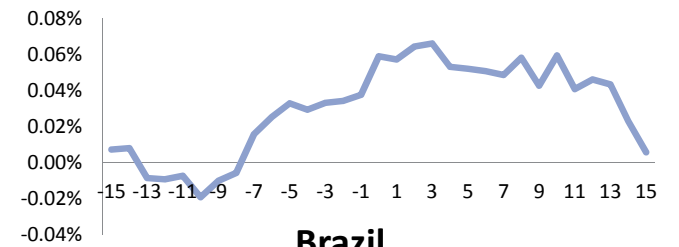
## Canada



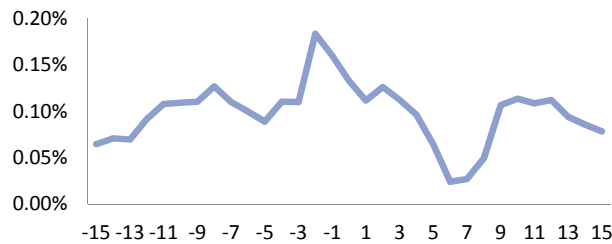
## FRA



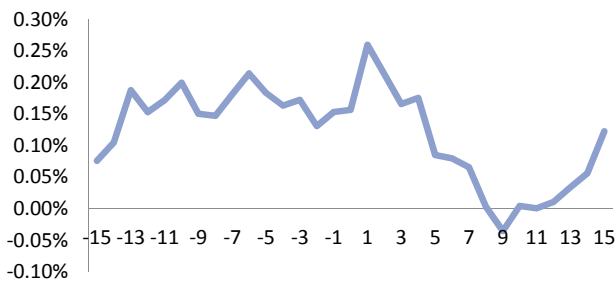
## Germany



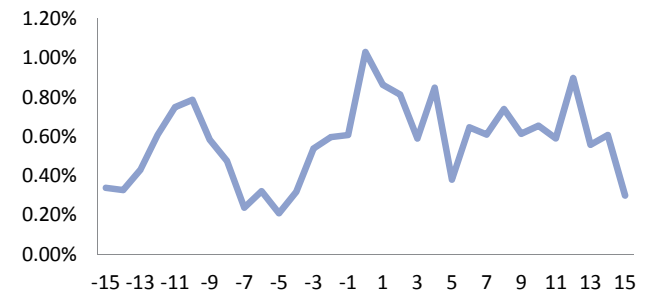
## Australia



## India



## Brazil



- 10 countries, for placebo  $k=-15, \dots, 15$
- Peak at  $k=0$ : 5 countries
  - US, Japan, Canada, France, Brazil
  - Probability(at least 5 out of 10 countries  $k=0$ ) =  $7.7E-6$
- Peak at  $k$  between  $[-3,3]$ : 4 countries
  - UK ( $k=2$ ), Australia ( $k=-2$ ), Germany ( $k=3$ ), India ( $k=1$ )
  - Probability(at least 9 out of 10 countries  $k$  in  $[-3,3]$ ) =  $1.2E-5$
- China peaks at  $k= -14$ 
  - Even here,  $k=0$  is a local maximum.
  - Maybe Chinese New Year, long holidays at May 1, Oct 1?

Evidence for the calendar of  
expectation errors



# 1. Value premium

- Value stocks (high book-to-market stocks) perform better than growth stocks (low book-to-market stocks)
- Our hypothesis: if value premium is related to expectation error, value premium is high in early month when news about fundamental corrects the expectation.
  - The spirit of our analysis here is similar to La Porta (JF 2002) which shows that high value premium during 3-day quarterly earnings announcement window is consistent with expectation error

Cumulative 15-day HML return in 1<sup>st</sup> and 2<sup>nd</sup> half months. US 1963-2012 data.

	HML half1	HML half2	diff	t(diff)
All months	0.37%	0.12%	0.25%	3.82
No Jan	0.29%	0.11%	0.18%	2.70

Exclude day [-1,1] around quarterly earnings announcement (La Porta JF 2002)

	HML half1	HML half2	diff	t(diff)
All months	0.32%	0.10%	0.22%	3.60
No Jan	0.24%	0.09%	0.16%	2.44

76% of value premium is in half1.

## 2. Equity premium puzzle?

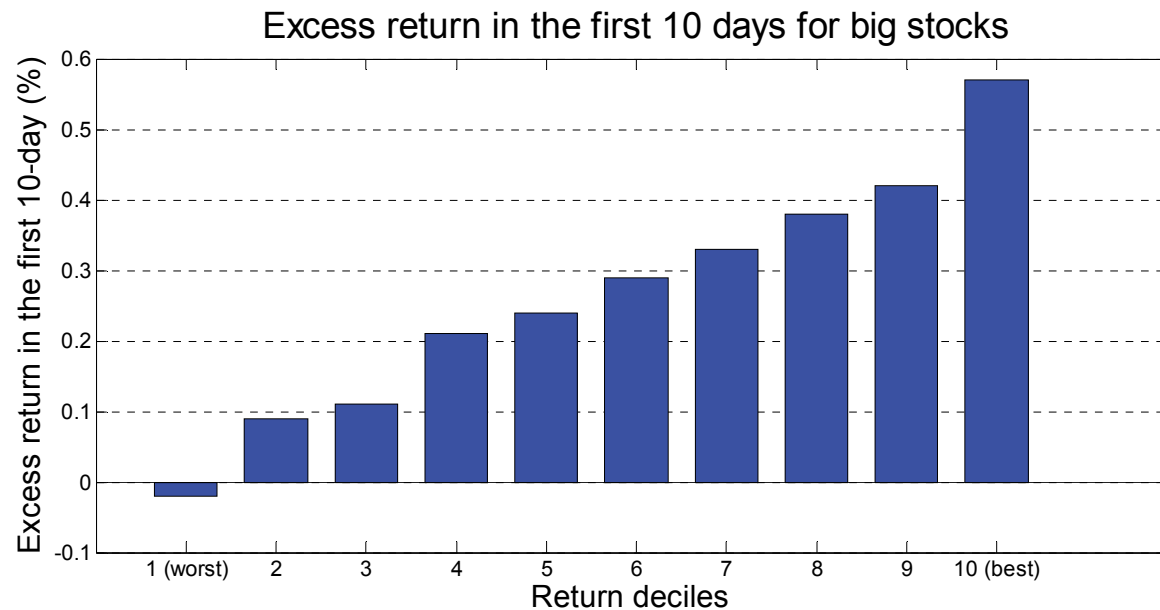
- Can the high equity premium in the US be due to luck?
  - Fama French (JF 2002): US stock return in the last half century is a lot higher than expected, using dividend growth rate to measure expected capital gain
- Our hypothesis implies the high stock market return, if due to expectation error, will concentrate in early month
- Does it hold?
- Yes, the turn-of-the-month literature.
  - Finds that market return is high around the turn of the month
  - Ariel (JFE 1987), Lakonishok and Smidt (RFS 1988)
- This is consistent with our hypothesis

- We are doing more formal tests linking equity premium puzzle with the turn-of-the-month through our mechanism

Information transmission

- The lumpy news production at month end also helps study information transmission during the next month.
- We find some evidence that bad news travels slowly

# Bad news travels slowly?



y axis:  $r(\text{day1-10}) - [r(\text{day1-10}) + r(\text{day11-20}) + r(\text{day21- month end})]/3$   
Stocks are sorted into deciles based on whole-month return

# Bad news travels slowly?

- We tested stock price jumps, and find
  - Stocks with **better return in a month** tend to have **more jumps that are positive** during **early month** than the rest of the month, compared to stocks with worse return in a month.
  - Stocks with **worse returns in a month** tend to have **more jumps that are negative** in **late month** relative to the rest of a month, compared to stocks with better return in a month.
  - Jump is defined as one-day price fluctuation  $> 2 \times$  daily volatility (1-year rolling window)
  - If jumps are due to the arrival of news, this is consistent with bad news travels slower than good news
  - Tables are suppressed



# Why market skewness $< 0$ , stock skewness $> 0$ ?

- Slow travel of bad news may be due to strategic disclosure.
  - Caveat: there are other channels such as short-sales constraint in Diamond and Verrecchia (JFE 1987)
- Assuming strategic disclosure, Acharya, DeMarzo and Kremer (AER 2011) show delaying the release of bad information generates stock-level positive skewness while clustering of bad firm-level information around common signal can give negative market return skewness.
- Hypothesis: the **portfolio return skewness** is **more negative** in **late month** than early month, holding fixed stock-level return skewness.
  - Joint hypothesis of (1) news about fundamental is produced at month end, and (2) strategic disclosure by firm in the next month as in Acharya et al.

# Test skewness hypothesis

Calendar day	1-10		11-20		21-last	
	skew	<i>t-stat</i>	skew	<i>t-stat</i>	skew	<i>t-stat</i>
Stock level						
Big stock	0.11	(20.79)	0.10	(18.87)	0.09	(16.91)
Small stock	0.13	(25.95)	0.12	(26.30)	0.12	(24.66)
Market level						
Value-weighted index	0.01	(0.46)	-0.04	(1.68)	-0.07	(2.58)
Equal-weighted index	-0.12	(4.59)	-0.14	(5.23)	-0.18	(6.74)
Big stock skewness - value-weighted market skewness						
	0.10	(4.27)	0.15	(6.34)	0.16	(6.68)
Small stock skewness - equal-weighted market skewness						
	0.25	(10.12)	0.26	(10.50)	0.30	(11.77)

# Conclusion

- We find support for the hypothesis that the production and dissemination of news about firm fundamental has a calendar
  - If firms tally their bottom lines at the month end and such news about fundamental is reflected in the stock returns early next month.
- Find support that expectation error (instead of change in risk premium) affects:
  - Value premium (76% in 1<sup>st</sup> half month)
  - Equity premium (manifested as the turn-of-the-month effect)
- Find support that strategic disclosure helps drive the difference between stock return skewness and market return skewness

# Shorter conclusion

- Info production: MONTH END
- Price adjustment: MONTH BEGINNING
- Realization of expectation error: MONTH BEGINNING