Foreign Sentiment

Azi Ben-Rephael, Xi Dong, Massimo Massa, Changyun Zhou

孔彤阳 2021/07/22

Background & Motivation

- It is almost a Folk theorem that foreign investors exert a positive effect on local markets in terms of higher liquidity, and better informational efficiency. The underlying assumption is that international portfolio flows reflect "rational" investors' decisions.

- However, sentiment is of first-order importance in investor behavior and asset pricing and may ultimately lead to overreaction and a subsequent return reversal at the aggregate market level.

- Given that empirical and theoretical evidence suggests that sentiment can arise through misinterpreting fundamental news, cross-border sentiment, unlike domestic one, may arise from misreaction to the fundamental information from the destination market rather than the origin market.

Research Question

1. Do foreign investors display sentiment in their cross-border portfolio decisions inducing noise in destination-market prices? √

2. If such sentiment effect exists, does it arise due to foreign investors misinterpreting and overreacting to destination-market news? √

Literatures

- International Asset Pricing

  - Gabaix and Koijen (2020) show that flows generate surprisingly high contemporaneous price fluctuations in U.S. market-level prices.

  - Rapach, Strauss, and Zhou (2013) argue that U.S. fundamentals (reflected in U.S. market returns) are a momentum predictor of foreign market returns.

  - Cross-border portfolio allocation studies support the information role of equity capital flows (e.g., Froot and Ramadorai 2008).

Literatures

- News, Investor behavior, Asset prices
  - Calomiris and Mamaysky (2019) document the return predictability of news while taking no stand on the mixed signs of such predictability in individual countries.
  - Huang, Lehkonen, Pukthuanthong, and Zhou (2018) show news tone return predictability across asset classes, with mixed signs.
  - Dang, Moshirian, and Zhang (2015) study the commonality of news tone around the world.

Literatures

- Investor Sentiment

Prior studies focus on identifying a "global" sentiment based on evidence of contagion or common movement of local sentiment measures (e.g., Baker et al. 2012; Gao et al. 2018).

Contribution

1. Contribute to the literature on international asset pricing.

2. Inform the discussion of the relation between news, investor behavior, and asset prices.

3. Contribute to the investor sentiment literature.

Data & Sentiment Measures

- Returns

  International country-level equity returns are the monthly returns of Morgan Stanly International Capital (MSCI) country indices obtained from Datastream, from 1992 to 2017.

- Flows and Sentiment Measures

  We obtain mutual fund flows data for the U.S. and 21 non-U.S. developed markets. Aggregate monthly U.S.-based open-end mutual fund flow data are from Investment Company Institute (ICI). Specifically, the ICI decompose total fund net flows into four components: exchanges in, exchanges out, sales, and redemptions. The components of total net flows are grouped into two unique parts: net exchanges (exchanges in – exchanges out), which capture intra-family mutual fund money shifts across different fund categories; and net sales and redemptions (sales – redemptions), which captures the cash that enters or exits

  the fund family.

Data & Sentiment Measures

- Flows and Sentiment Measures
  - U.S. investors' foreign sentiment FS^{US}: intra-family net exchanges into and out of international funds, normalized by the previous-month total assets of international funds.
  - Net sales and redemptions $FNSR^{US}$: normalized net sales of U.S.-based international funds.
  - U.S. investors' local sentiment LS^{US}: based on intra-family money shifts between U.S.-based equity funds and bond funds.
  - Non-U.S. local investors' sentiment LS^{INT}: the local equity fund flows minus the local bond fund flows in that country.
  - Non-U.S. investors' foreign sentiment FS^{INT}: (1) calculate the flow shifting proxy for each country as the flows to non-U.S. domiciled U.S. equity funds minus the flows to non-U.S. domiciled local equity fund; (2) take a value-weighted average of these flow shifting proxies across countries using each country's market cap as the weight.

Data & Sentiment Measures

- Newswire

  Country-level news tone and number of newswire articles are obtained from CM. News tone is an aggregation of word tone difference of each newswire article on a specific topic within a country. The data are from January1996 to December 2015.

- Foreignness Measures

  We use five measures of the difference between a country and the U.S. to proxy for the degree to which U.S. investors may view the country as an out-group. (1) cultural distance between

  each country and the U.S.; (2) the country's physical distance from the U.S.; (3) the ancestral distance; (4) religion dummy; (5) language dummy.

Data & Sentiment Measures

- Summary Statistics

Variable	Mean	Median	STD	Min	Max	N
Panel A: U.S. market						
FS^{US}	0.01%	0.01%	0.29%	-1.55%	1.34%	312
$FNSR^{US}$	0.59%	0.50%	0.87%	-1.90%	5.57%	312
LS^{US}	0.00%	-0.01%	0.12%	-0.72%	0.55%	312
$LNSR^{US}$	0.39%	0.27%	0.59%	-1.18%	2.45%	312
$USRet$	0.86%	1.28%	4.02%	-16.70%	10.90%	312
$NewsTone^{US}$	-0.45%	-0.43%	0.09%	-0.75%	-0.28%	240
Panel B: International markets						
LS^{INT}	0.01%	0.00%	3.32%	-40.36%	30.74%	5445
FS^{INT}	-0.03%	0.01%	1.10%	-5.65%	6.19%	312
$IntRet$	0.79%	1.01%	6.57%	-37.04%	33.26%	6552
$NewsTone^{INT}$	-0.40%	-0.37%	0.18%	-1.38%	0.05%	5040

U.S. Based Foreign Sentiment and International Markets

- The Contemporaneous Relation between Flows and International Returns

$$IntRet_{c,t} = \beta_0 + \beta_1 Flow + \beta_2 Control_{c,t} + \delta_{c,t} + \varepsilon_{c,t}$$

$Flow$ is either FS^{US} or LS^{INT}; $IntRet_{c,t}$ is the monthly return of international market c at month t. The regressions include country fixed effects.

- The Contemporaneous Relation between Flows and International Returns

	(1) $IntRet_{c,t}$	(2) $IntRet_{c,t}$	(3) $IntRet_{c,t}$
FS_t^{US}	**0.012*****		**0.013*****
	(0.00)		**(0.00)**
$LS_{c,t}^{INT}$		0.0021	**0.0025****
		(0.12)	**(0.05)**
$FNSR_t^{US}$	0.0068*		0.0083*
	(0.08)		(0.06)
$IntRet_{c,t-1}$	0.028	0.084	0.029
	(0.55)	(0.13)	(0.56)
$IntRet_{c,t-2}$	-0.061	-0.033	-0.072
	(0.16)	(0.50)	(0.13)
$IntRet_{c,t-3}$	0.047	0.097**	0.058
	(0.23)	(0.03)	(0.18)
$IntRet_{c,t-4}$	-0.021	0.013	-0.018
	(0.62)	(0.79)	(0.69)
$IntRet_{c,t-5}$	-0.018	0.0083	-0.015
	(0.67)	(0.86)	(0.74)
Obs.	6552	5445	5445
R2	0.08	0.02	0.08

U.S. Based Foreign Sentiment and International Markets

- The Relation between Sentiment and Subsequent International Returns

$$IntRet_{c,t+1:t+i} = \beta_0 + \beta_1 FS_t^{US} + \beta_2 Control_{c,t} + \delta_{c,t} + \varepsilon_{c,t}$$

$IntRet_{c,t+1:t+i}$ is the monthly future return of international market c over the next i months.

- The Relation between Sentiment and Subsequent International Returns

Panel A: Foreign sentiment predictability

	(1) $IntRet_{c,t+1}$	(2) $IntRet_{c,t+1:t+3}$	(3) $IntRet_{c,t+1:t+6}$	(4) $IntRet_{c,t+1:t+9}$	(5) $IntRet_{c,t+1:t+12}$
FS_t^{US}	**-0.0092*****	**-0.015*****	**-0.025*****	**-0.027****	**-0.034****
	(0.00)	**(0.01)**	**(0.00)**	**(0.02)**	**(0.01)**
$FNSR_t^{US}$	0.0082**	0.013*	0.020**	0.022**	0.028**
	(0.05)	(0.06)	(0.04)	(0.05)	(0.03)
$IntRet_{c,t}$	0.088*	0.15*	0.22*	0.18	0.16
	(0.09)	(0.07)	(0.08)	(0.24)	(0.32)
$IntRet_{c,t-1}$	-0.025	0.073	0.052	0.034	-0.013
	(0.59)	(0.35)	(0.65)	(0.82)	(0.94)
$IntRet_{c,t-2}$	0.081**	0.11	0.098	0.036	0.023
	(0.04)	(0.16)	(0.38)	(0.81)	(0.89)
$IntRet_{c,t-3}$	0.0049	0.013	-0.044	-0.094	-0.12
	(0.91)	(0.85)	(0.72)	(0.55)	(0.47)
$IntRet_{c,t-4}$	0.0047	-0.038	-0.060	-0.11	-0.091
	(0.91)	(0.71)	(0.70)	(0.52)	(0.61)
$IntRet_{c,t-5}$	-0.0044	-0.055	-0.13	-0.14	-0.14
	(0.93)	(0.57)	(0.39)	(0.41)	(0.45)
Obs.	6531	6489	6426	6363	6300
R2	0.03	0.03	0.03	0.03	0.03

- The Relation between Sentiment and Subsequent International Returns

Panel B: Foreign and local sentiment predictability

	(1) $IntRet_{c,t+1}$	(2) $IntRet_{c,t+1:t+3}$	(3) $IntRet_{c,t+1:t+6}$	(4) $IntRet_{c,t+1:t+9}$	(5) $IntRet_{c,t+1:t+12}$
FS_t^{US}	-0.010***	-0.015**	-0.023**	-0.023*	-0.027*
	(0.01)	(0.02)	(0.02)	(0.07)	(0.06)
$LS_{c,t}^{INT}$	-0.0019	-0.0047**	-0.0085***	-0.011**	-0.013**
	(0.15)	(0.03)	(0.01)	(0.02)	(0.02)
$FNSR_t^{US}$	0.0096**	0.015*	0.020*	0.019	0.018
	(0.04)	(0.08)	(0.08)	(0.14)	(0.18)
LS_t^{US}	-0.0024	-0.0014	-0.0066	-0.0060	-0.0027
	(0.54)	(0.86)	(0.61)	(0.71)	(0.88)
$USRet_t$	0.090	-0.045	-0.019	-0.042	-0.034
	(0.42)	(0.83)	(0.95)	(0.92)	(0.94)
$IntRet_{c,t}$	0.070	0.19**	0.26**	0.21	0.18
	(0.18)	(0.03)	(0.02)	(0.14)	(0.27)
$IntRet_{c,t-1}$	-0.027	0.087	0.055	0.034	-0.022
	(0.58)	(0.29)	(0.65)	(0.84)	(0.90)
$IntRet_{c,t-2}$	0.10**	0.13	0.100	0.037	0.026
	(0.02)	(0.11)	(0.41)	(0.82)	(0.89)
$IntRet_{c,t-3}$	0.0063	-0.000037	-0.085	-0.13	-0.13
	(0.89)	(1.00)	(0.52)	(0.45)	(0.45)
$IntRet_{c,t-4}$	0.0011	-0.068	-0.10	-0.16	-0.12
	(0.98)	(0.54)	(0.53)	(0.41)	(0.52)
$IntRet_{c,t-5}$	-0.020	-0.092	-0.18	-0.18	-0.15
	(0.69)	(0.39)	(0.28)	(0.34)	(0.44)
Obs.	5445	5403	5340	5277	5214
R2	0.03	0.03	0.03	0.03	0.03

U.S. Based Foreign Sentiment and International Markets

- Out-of-Sample Predictability
  - We perform out-of-sample tests using both recursive and rolling-window methods. For the recursive method, our test is on the second half of the sample period (2005-2017) using the first half of the sample (1992-2004) as the starting window for the training period. For the rolling window method, the length of the rolling window equals the length of half of the sample period.
  - The out-of-sample R^2 measures the proportional reduction in mean squared forecast error (MSFE) of predictive model relative to benchmark model.

U.S. Based Foreign Sentiment and International Markets

- Out-of-Sample Predictability
    - Benchmark model: $IntRet_{t+i} = \beta_0 + \varepsilon_{t+i}$.
    - Alternative model: $IntRet_{t+i} = \beta_0 + \beta_1 FSR_t^{US} + \varepsilon_{t+i}$.
    - FSR_t^{US} is residual FS^{US}. We construct two residual FS^{US} to reflect the spirit of the foreign sentiment predictability.
    - To avoid look-ahead bias, all information used to estimate residual FS^{US} is limited to the data available through the training period.

U.S. Based Foreign Sentiment and International Markets

- Out-of-Sample Predictability

Panel A: FSR_1^{US}

	Out-of-Sample R^2 (2005-2017)				
	$IntRet_{t+1}$	$IntRet_{t+1:t+3}$	$IntRet_{t+1:t+6}$	$IntRet_{t+1:t+9}$	$IntRet_{t+1:t+12}$
Rolling	4.00%	1.42%	1.74%	0.19%	-0.60%
Recursive	2.65%	2.26%	2.40%	1.25%	0.70%

Panel B: FSR_2^{US}

	Out-of-Sample R^2 (2005-2017)				
	$IntRet_{t+1}$	$IntRet_{t+1:t+3}$	$IntRet_{t+1:t+6}$	$IntRet_{t+1:t+9}$	$IntRet_{t+1:t+12}$
Rolling	4.58%	2.13%	1.87%	0.29%	-0.72%
Recursive	2.90%	2.76%	2.88%	1.61%	1.01%

U.S. Based Foreign Sentiment and International Markets

- Conclusion

- When U.S. mutual fund investors shift their pre-existing investments between the U.S. and international markets, international market prices move in the direction of U.S. flows contemporaneously, but then reverse in the subsequent months.

- The foreign sentiment effect on returns is through a channel that is different from a simple absolute optimism/pessimism about the local markets in both the destination and origin countries.

- Residual FS^{US} has considerable out-of-sample predictability.

The Role of Foreign Investors

- The Causal Effect of Foreign Asset Reallocation

  Our first approach is to instrument FS^{US} using the terrorism activities. Terrorism is a good instrument for sentiment-driven flows because they have quite small economic costs (Cuculiza, Antoniou, Kumar and Maligkris 2020), and because, unlike flows, the success of terrorist attacks is unlikely due to market returns or market timing.

Granular Instrumental Variable

- Gabaix and Koijen (2020a,b, henceforth, GK) shows that idiosyncratic shocks from large players affect aggregate outcomes and thus they are valid and powerful instruments. At the same time, these shocks are unlikely to be influenced by omitted variables or reverse causality since these concerns systematically affect all players.

- We extract the idiosyncratic terrorism shocks in non-U.S. developed markets to form GIV.

- We construct two alternative GIVs.

Granular Instrumental Variable

- GIV1 is the market-value-weighted average minus equal-weighted average of terrorist attack numbers across all developed countries. This is the simplest form of GIV in GK, which assumes that every country has uniform loadings on a common omitted factor η_t as follows:

$$TAN_{j,t} = \eta_t + \mu_{j,t}$$

GIV1 will be able to remove such common factor and focus on large idiosyncratic shocks because

$$GIV1_t = \sum_j s_{j,t} TAN_{j,t} - \sum_j \frac{1}{N} TAN_{j,t} = \sum_j s_{j,t} \mu_{j,t} - \sum_j \frac{1}{N} \mu_{j,t}$$

Granular Instrumental Variable

- GIV2 allows for a more enriched factor structure of terrorism shocks. First, we construct pseudo-equal weight w_j to allow for the heteroskedasticity in country-level terrorism shocks for each country j. We then generate the terrorism shock for each country as the residuals with the following panel regression, using the pseudo-equal weight as regression weight:

$$TAN_{j,t} = \alpha_j + \beta_t + \sigma_j t + \epsilon_{j,t}$$

where α_j is the country fixed effect, β_t is the time fixed effect, and t is time trend. GIV2 is the value-weighted average residual terrorism shocks $\hat{\epsilon}_{j,t}$ across all non-U.S. developed countries.

The Role of Foreign Investors

- The Causal Effect of Foreign Asset Reallocation

  We run the following time-series two-stage-least-square regression (2SLS) with GIV1 and GIV2 separately:

  $$FS_t^{US} = \alpha + bGIV_t + C'Control_t + v_t,$$

  $$IntRet_{t+1:t+i} = \beta_0 + \beta_1 \widehat{FS_t^{US}} + B'Control_t + \xi_t$$

  Thus, we test whether terrorism-induced flow shifts generate causal effect on the aggregate non-U.S. developed market return.

Panel A: GIV vw - ew

	Exactly Identified			Over Identified		
	(1)	(2)	(3)	(4)	(5)	(6)
	1st stage	*2nd stage*		*1st stage*	*2nd stage*	
	FS_t^{US}	$IntRet_t$	$IntRet_{t+1:t+12}$	FS_t^{US}	$IntRet_t$	$IntRet_{t+1:t+12}$
$\widehat{FS_t^{US}}$		0.016**	-0.055***		0.019**	-0.052***
		(0.03)	(-0.00)		(0.02)	(-0.00)
$GIV1_t$	-0.200***					
	(-0.00)					
$GIV1_t^{even}$				-0.078***		
				(-0.00)		
$GIV1_t^{odd}$				-0.034**		
				(-0.00)		

Control variables: $FNSR_t^{US}$, $IntRet_{t-1}$, $IntRet_{t-2}$, $IntRet_{t-3}$, $IntRet_{t-4}$, $IntRet_{t-5}$

Obs.	312	312	300	312	312	300
R2	0.65	0.10	0.03	0.66	0.11	0.03
Over-Identification Test (J-stat)					1.15 (0.28)	0.24 (0.62)

Panel B: GIV pca control

	Exactly Identified			Over Identified		
	(1)	(2)	(3)	(4)	(5)	(6)
	1st stage	*2nd stage*		*1st stage*	*2nd stage*	
	FS_t^{US}	$IntRet_t$	$IntRet_{t+1:t+12}$	FS_t^{US}	$IntRet_t$	$IntRet_{t+1:t+12}$
$\widehat{FS_t^{US}}$		0.019***	-0.032**		0.020***	-0.037**
		(0.00)	(-0.04)		(0.00)	(-0.01)
$GIV2_t$	-0.150***					
	(-0.00)					
$GIV2_t^{even}$				-0.092***		
				(-0.00)		
$GIV2_t^{odd}$				-0.039***		
				(-0.00)		

Control variables: PC_t^{1st}, $FNSR_t^{US}$, $IntRet_{t-1}$, $IntRet_{t-2}$, $IntRet_{t-3}$, $IntRet_{t-4}$, $IntRet_{t-5}$

Obs.	312	312	300	312	312	300
R2	0.70	0.11	0.03	0.70	0.11	0.04
Over-Identification Test (J-stat)					0.01 (0.91)	2.60 (0.11)

The Role of Foreign Investors

- Foreign Investment
  - Given our findings on the causal relation of foreign sentient effect, one would expect the effect to be stronger for markets with larger fraction of foreign investment. To shed light on such a linkage and to get closer to a causal interpretation, we proceed in two steps.
  - First, we provide compelling cross-country results where we show that the degree of U.S. investment in a country is indeed associated with the degree of the foreign sentiment effect.
  - Second, we use a quasi-natural experiment that affects the degree of foreign investment in a given market to support the idea that the degree of U.S. foreign investment causes / reinforces such sentiment effect.

Foreign Investment

- Foreign Investment and Foreign Sentiment
  - To obtain evidence that it is U.S. investors who generate the foreign sentiment effect, we start by exploring the cross-sectional variation of potential U.S. investment in each destination market.
  - We use the assets under management (AUM) of all the U.S. ETFs tracking an individual non-U.S. country market return as a proxy for U.S. investors' investment in that country.
  - U.S. investors' investment tilt to the individual country c:
    $$ForeignTilt = \frac{U.S\ ETF\ AUM_c}{Market\ Cap_c}.$$

Foreign Investment

- Foreign Investment and Foreign Sentiment

$$IntRet_{c,t+1:t+i} = \beta_0 + \beta_1 FS_t^{US} + \beta_2 ForeignTilt_{c,t}$$

$$+\beta_3 FS_t^{US} * ForeignTilt_{c,t} + \beta_4 Control + \delta_{c,t} + \varepsilon_{c,t}$$

	(1) $IntRet_{c,t+1}$	(2) $IntRet_{c,t+1:t+3}$	(3) $IntRet_{c,t+1:t+6}$	(4) $IntRet_{c,t+1:t+9}$	(5) $IntRet_{c,t+1:t+12}$
FS_t^{US}	-0.010**	-0.0083	-0.0050	-0.0059	0.0017
	(0.03)	(0.21)	(0.68)	(0.69)	(0.92)
$FS_t^{US} * ForeignTilt_{c,t}$	-0.0030	**-0.011***	**-0.020***	**-0.022***	**-0.021**
	(0.21)	**(0.01)**	**(0.00)**	**(0.01)**	**(0.02)**
$ForeignTilt_{c,t}$	0.00063	0.00038	0.0052	0.0092	0.0079
	(0.86)	(0.95)	(0.61)	(0.51)	(0.64)

Control variables: $FNSR_t^{US}$, $IntRet_t$, $IntRet_{t-1}$, $IntRet_{t-2}$, $IntRet_{t-3}$, $IntRet_{t-4}$, $IntRet_{t-5}$

Obs.	4045	4007	3950	3893	3836
R2	0.03	0.03	0.03	0.03	0.02

Foreign Investment

- A Quasi-Natural Experiment

  - The passage of the Jobs and Growth Tax Relief Reconciliation Act (JGTRRA) in 2003 significantly reduced U.S. investors' taxes on dividend income for the foreign firms.

  - After JGTRRA, U.S. investors are likely to increase investment more in higher dividend-paying countries, while the incentives of destination-market local investors to increase their equity investment do not change.

  - This suggests that the variation in U.S. ForeignTilt to non-U.S. countries around the event would be plausibly exogenous.

Foreign Investment

- A Quasi-Natural Experiment
  - We estimate a difference-in-differences (DD) specification. The treatment variable is the country-level dividend yield, calculated as the prior year-end country-level total dividend divided by country market value.
  - We restrict our event sample to the observations three years before and after the tax reform.
  - Our DD approach consists of several steps.

Foreign Investment

- A Quasi-Natural Experiment

  - We first examine how ForeignTilt changes across different dividend-paying countries around the tax reform:

$$ForeignTilt_{c,t}$$
$$= \beta_0 + \beta_1 Div_{c,t} + \beta_2 After_t + \beta_3 Div_{c,t} * After_t + \beta_4 Control + \delta_{c,t} + \varepsilon_{c,t}$$

  - Next, we investigate how the exogenous increase in ForeignTilt affects the foreign sentiment effect:

$$IntRet_{c,t+1:t+i}$$
$$= \beta_0 + \beta_1 FS_t^{US} + \beta_2 Div_{c,t} + \beta_3 After_t + \beta_4 FS_t^{US} * Div_{c,t} + \beta_5 Div_{c,t}$$
$$* After_t + \beta_6 FS_t^{US} * After_t + \beta_7 FS_t^{US} * Div_{c,t} * After_t + \beta_8 Control$$
$$+ \delta_{c,t} + \varepsilon_{c,t}$$

Foreign Investment

- A Quasi-Natural Experiment

Panel A: U.S. *ForeignTilt* and JGTRRA

	(1) $ForeignTilt_{c,t}$
$Div_{c,t} * After_t$	0.10***
	(0.01)

Control variables: Div_t, $After_t$, $IntRet_{t-1}$, $IntRet_{t-2}$, $IntRet_{t-3}$, $IntRet_{t-4}$, $IntRet_{t-5}$

Obs.	1152
R2	0.86

Panel B: FS^{US} and JGTRRA

	(1) $IntRet_{c,t+1:t+12}$
$FS_t^{US} * Div_{c,t} * After_t$	-0.04***
	(0.00)

Control variables: FS_t^{US}, Div_t, $After_t$, $FS_t^{US} *Div_t$, $FS_t^{US} *After_t$, $Div_t *After_t$, $FNSR_t^{US}$, $IntRet_t$, $IntRet_{t-1}$, $IntRet_{t-2}$, $IntRet_{t-3}$, $IntRet_{t-4}$, $IntRet_{t-5}$

Obs.	1152
R2	0.21

The Role of Foreign Investors

- Further Analyses

  - Why foreign investors can generate such a strong effect on developed market returns?

  - We find that the time-series correlation coefficient between FS^{US} and U.S. cross-border equity flows is 42%.

  - Alternatively, a regression of the cross-border equity flows on FS^{US} yields an R^2 of 17%, indicating a nontrivial amount of the variation in cross-border flows is explained by FS^{US}.

  - These numbers suggest that FS^{US} can serve as a proxy for the general sentiment-driven component in cross-border flows.

The Role of Foreign Investors

- Further Analyses

    - To further support this conjecture, we project the U.S. cross-border flows to each destination market on FS^{US}, thus decomposing the flows into a predicted component based on FS^{US} ($PredEF$) and a residual component that is not explained by FS^{US} ($ResEF$).

	(1) $IntRet_{c,t+1}$	(2) $IntRet_{c,t+1:t+3}$	(3) $IntRet_{c,t+1:t+6}$	(4) $IntRet_{c,t+1:t+9}$	(5) $IntRet_{c,t+1:t+12}$
$PredEF_{c,t}$	-0.0087**	-0.016**	-0.028***	-0.030**	-0.036***
	(0.01)	(0.02)	(0.00)	(0.01)	(0.01)
$ResEF_{c,t}$	0.0011	0.0030**	0.0073***	0.0090***	0.010***
	(0.16)	(0.02)	(0.00)	(0.00)	(0.00)

Control variables: $FNSR_t^{US}$, $IntRet_t$, $IntRet_{t-1}$, $IntRet_{t-2}$, $IntRet_{t-3}$, $IntRet_{t-4}$, $IntRet_{t-5}$

The Role of Foreign Investors

- Conclusion

- There is causal relation of foreign sentient effect.

- The foreign sentiment effect is larger in countries with potentially higher U.S. investment influence, which suggests that U.S. investors contribute to the foreign sentiment effect on local market prices.

- That foreign sentiment is an important component in total capital flows.
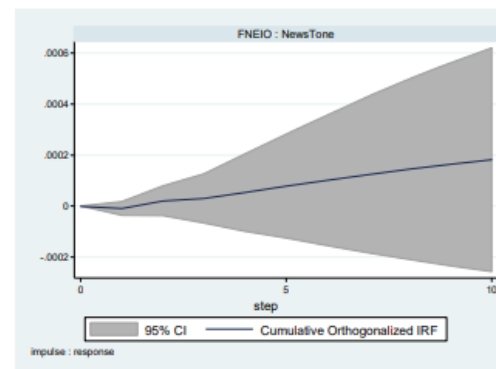
Foreign Sentiment and Public News Tone

- The Dynamic Relation between News Tone and Sentiment

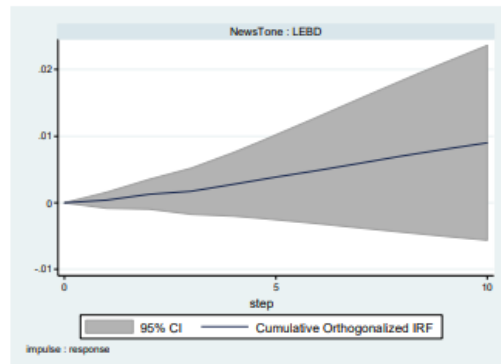**Cumulative Response of**

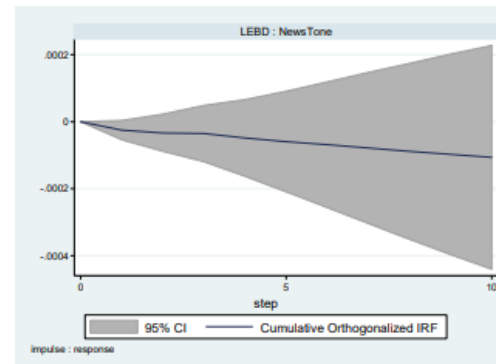**1. FS^{US} to a one STD shock in $NewsTone^{INT}$**
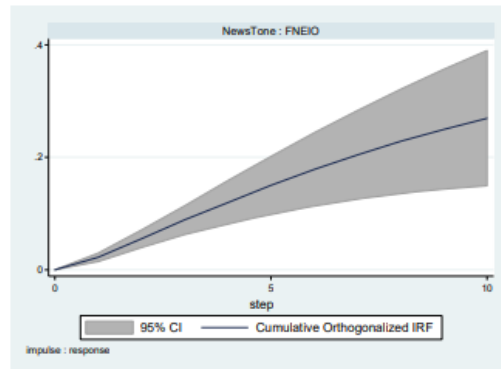
2. $NewsTone^{INT}$ to a one STD shock in FS^{US}

3. LS^{INT} to a one STD shock in $NewsTone^{INT}$

4. $NewsTone^{INT}$ to a one STD shock in LS^{INT}

Foreign Sentiment and Public News Tone

- The Interaction of News Tone with Sentiment and Its Implications for Future Returns

Panel A: Interaction of FS^{US} and news tone

	(1) $IntRet_{c,t+1}$	(2) $IntRet_{c,t+1:t+3}$	(3) $IntRet_{c,t+1:t+6}$	(4) $IntRet_{c,t+1:t+9}$	(5) $IntRet_{c,t+1:t+12}$
FS_t^{US}	-0.010**	-0.0020	0.0038	0.016	0.039*
	(0.05)	(0.84)	(0.82)	(0.45)	(0.08)
$LS_{c,t}^{INT}$	-0.0032	-0.0026	-0.012**	-0.016**	-0.020**
	(0.11)	(0.44)	(0.04)	(0.03)	(0.02)
$FS_t^{US}*RSNewsTone_{c,t}^{INT}$	-0.0098	**-0.040****	**-0.067****	**-0.11*****	**-0.15*****
	(0.28)	**(0.01)**	**(0.01)**	**(0.00)**	**(0.00)**
$LS_{c,t}^{INT}*RSNewsTone_{c,t}^{INT}$	0.0032	-0.0054	0.0023	0.0073	0.0096
	(0.45)	(0.43)	(0.83)	(0.57)	(0.51)

Control variables: $RSNewsTone_t^{INT}$, $FNSR_t^{US}$, $IntRet_t$, $IntRet_{t-1}$, $IntRet_{t-2}$, $IntRet_{t-3}$, $IntRet_{t-4}$, $IntRet_{t-5}$

Obs.	4372	4372	4372	4372	4372
R2	0.05	0.05	0.05	0.05	0.06

Foreign Sentiment and Public News Tone

- The Interaction of News Tone with Sentiment and Its Implications for Future Returns

Panel B: News tone interacted with both FS^{US+} and FS^{US-}

	(1) $IntRet_{c,t+1}$	(2) $IntRet_{c,t+1:t+3}$	(3) $IntRet_{c,t+1:t+6}$	(4) $IntRet_{c,t+1:t+9}$	(5) $IntRet_{c,t+1:t+12}$
$FS_t^{US+} * RSNewsTone_{c,t}^{INT}$	-0.014	0.0051	0.013	0.033	-0.022
	(0.40)	(0.82)	(0.69)	(0.45)	(0.66)
$FS_t^{US-} * RSNewsTone_{c,t}^{INT}$	-0.011	**-0.061****	-0.075	**-0.13****	**-0.13****
	(0.47)	**(0.05)**	(0.12)	**(0.02)**	**(0.02)**
$LS_{c,t}^{INT+} * RSNewsTone_{c,t}^{INT}$	0.0031	0.0012	0.015	0.028	0.044*
	(0.71)	(0.92)	(0.38)	(0.17)	(0.06)
$LS_{c,t}^{INT-} * RSNewsTone_{c,t}^{INT}$	0.0034	-0.013	-0.010	-0.016	-0.023
	(0.63)	(0.30)	(0.56)	(0.45)	(0.37)

Control variables: FS_t^{US+}, FS_t^{US-}, LS_t^{INT+}, LS_t^{INT-}, $RSNewsTone_t^{INT}$, $FNSR_t^{US}$, $IntRet_t$, $IntRet_{t-1}$, $IntRet_{t-2}$, $IntRet_{t-3}$, $IntRet_{t-4}$, $IntRet_{t-5}$

Obs.	4372	4372	4372	4372	4372
R2	0.05	0.06	0.06	0.07	0.08

Foreign Sentiment and Public News Tone

- The Role of News

  - The previous section suggests that the foreign sentiment effect appears to arise from overreaction to the destination-market news. In this section, we provide supportive evidence that such news indeed causes U.S. investors to overreact.

  - We take advantage of the fact that the impact of news on investors is determined by the degree of investor attention (Tetlock 2015 and Ben-Rephael et al. 2017) and attention constraints (e.g.,Hirshleifer and Teoh, 2003; Hirshleifer, et al. 2009).

Foreign Sentiment and Public News Tone

- The Role of News
  - We argue that the Olympic Games held in the U.S. attract distract U.S. investors from paying attention to foreign news.

	(1) $IntRet_{c,t}$	(2) $IntRet_{c,t+1}$	(3) $IntRet_{c,t+1:t+3}$	(4) $IntRet_{c,t+1:t+6}$	(5) $IntRet_{c,t+1:t+9}$	(6) $IntRet_{c,t+1:t+12}$
FS_t^{US}	-0.00092	-0.0094*	-0.0021	0.0022	0.0093	0.031
	(0.88)	(0.07)	(0.83)	(0.89)	(0.66)	(0.18)
$Olympics_t$	0.014*	-0.027***	-0.0016	-0.0021	0.064**	0.033
	(0.08)	(0.00)	(0.92)	(0.93)	(0.02)	(0.38)
$FS_t^{US} * RSNewsTone_{c,t}^{INT}$	0.014**	-0.0058	-0.021**	-0.035**	-0.055***	-0.076***
	(0.02)	(0.26)	(0.02)	(0.02)	(0.01)	(0.00)
$FS_t^{US} * RSNewsTone_{c,t}^{INT} * Olympics_t$	**-0.0069*****	**0.0023****	**0.0048***	**0.026*****	**0.024*****	**0.056*****
	(0.00)	**(0.04)**	**(0.08)**	**(0.00)**	**(0.00)**	**(0.00)**
Simulated p-values	**[0.08]**	**[0.22]**	**[0.29]**	**[0.07]**	**[0.08]**	**[0.04]**

Control variables: $RSNewsTone_t^{INT}$, $FS_t^{US}*Olympics_t$, $RSNewsTone_t^{INT}*Olympics_t$, $FNSR_t^{US}$, $IntRet_t$, $IntRet_{t-1}$, $IntRet_{t-2}$, $IntRet_{t-3}$, $IntRet_{t-4}$, $IntRet_{t-5}$

Obs.	4998	4998	4998	4998	4998	4998
R2	0.12	0.04	0.04	0.04	0.05	0.05

Foreign Sentiment and Public News Tone

- Foreignness and News-Driven Foreign Sentiment

  - Investors' overreaction to the destination-market bad news is related to a couple of behavioral biases, including attribution bias and outgroup negativity.

  - If U.S. investors display an outgroup negativity type of bias towards foreign countries, such bias should be magnified if the country is perceived as more foreign.

  - To support this interpretation, we investigate whether overreaction to foreign bad news increases with U.S. investor's perceived foreignness of a country.

Foreign Sentiment and Public News Tone

- Foreignness and News-Driven Foreign Sentiment

	(1) Cultural Distance	(2) Physical Distance	(3) Ancestral Distance	(4) Religion Dummy	(5) Language dummy	(6) Composite index
	$IntRet_{c,t+1:t+12}$	$IntRet_{c,t+1:t+12}$	$IntRet_{c,t+1:t+12}$	$IntRet_{c,t+1:t+12}$	$IntRet_{c,t+1:t+12}$	$IntRet_{c,t+1:t+12}$
FS_t^{US}	0.015	0.026	0.031	0.010	0.038*	0.027
	(0.49)	(0.29)	(0.20)	(0.68)	(0.07)	(0.21)
$Foreign_c$	-0.067***	-0.025	0.033**	-0.028**	-0.0085	-0.035*
	(0.00)	(0.11)	(0.02)	(0.03)	(0.63)	(0.10)
$FS_t^{US} * RSNewsTone_{c,t}^{INT}$	-0.095***	-0.096**	-0.031	-0.087**	-0.13***	-0.078**
	(0.01)	(0.02)	(0.27)	(0.03)	(0.00)	(0.03)
$FS_t^{US} * RSNewsTone_{c,t}^{INT} * Foreign_c$	**-0.063****	**-0.051****	**-0.049****	**-0.062*****	0.014	**-0.081****
	(0.02)	**(0.03)**	**(0.05)**	**(0.00)**	(0.60)	**(0.02)**

Control variables: $RSNewsTone_t^{INT}$, $FS_t^{US} * Foreign_c$, $RSNewsTone_t^{INT} * Foreign_c$, $FNSR_t^{US}$, $IntRet_t$, $IntRet_{t-1}$, $IntRet_{t-2}$, $IntRet_{t-3}$, $IntRet_{t-4}$, $IntRet_{t-5}$

Obs.	4998	4998	4998	4998	4998	4998
R2	0.04	0.04	0.04	0.04	0.04	0.04

Foreign Sentiment and Public News Tone

- Conclusion

- The foreign sentiment effect is driven by an overreaction to negative destination-market foreign news, which leads to return reversal.

- The Olympics results provide causal evidence that investors' inattention to the destination market news leads to weaker overreaction to the destination-market news tone.

- The degree of a country's foreignness is a significant driver of the negative news-driven foreign sentiment effect.

Analysis of Non-U.S. investors' Foreign Sentiment

- We perform a comparable analysis of non-U.S. investors' foreign sentiment towards the U.S. market.

Panel A: Non-U.S. investors' foreign sentiment predictability on U.S. market return

	(1) $USRet_{t+1}$	(2) $USRet_{t+1:t+3}$	(3) $USRet_{t+1:t+6}$	(4) $USRet_{t+1:t+9}$	(5) $USRet_{t+1:t+12}$
LS_t^{US}	-0.0048	**-0.012***	**-0.020***	**-0.028****	**-0.035***
	(0.25)	**(0.10)**	**(0.06)**	**(0.04)**	**(0.07)**
FS_t^{INT}	0.00021	-0.0043	-0.021	**-0.034****	**-0.041****
	(0.95)	(0.63)	(0.11)	(0.03)	(0.03)
FS_t^{US}	-0.0066	-0.0076	-0.0096	-0.0068	-0.011
	(0.12)	(0.34)	(0.38)	(0.61)	(0.51)

Control variables: $FNSR_t^{US}$, $LNSR_t^{US}$, $USRet_t$, $USRet_{t-1}$, $USRet_{t-2}$, $USRet_{t-3}$, $USRet_{t-4}$, $USRet_{t-5}$

Obs.	311	309	306	303	300
R2	0.05	0.08	0.11	0.09	0.09

Analysis of Non-U.S. investors' Foreign Sentiment

- We then proceed to examine whether the public news channel is also an important channel driving the non-U.S. foreign sentiment effect.

Panel B: U.S. News tone interacted with both FS^{INT+} and FS^{INT-}

	(1) $USRet_{t+1}$	(2) $USRet_{t+1:t+3}$	(3) $USRet_{t+1:t+6}$	(4) $USRet_{t+1:t+9}$	(5) $USRet_{t+1:t+12}$
$LS_t^{US+} * RSNewsTone_t^{US}$	0.00079	-0.0074	-0.064	-0.086	-0.11
	(0.96)	(0.80)	(0.23)	(0.23)	(0.21)
$LS_t^{US-} * RSNewsTone_t^{US}$	0.022	-0.0039	0.071*	0.051	0.10
	(0.26)	(0.91)	(0.09)	(0.36)	(0.16)
$FS_t^{INT+} * RSNewsTone_t^{US}$	0.012	0.045	0.027	-0.0019	-0.079
	(0.60)	(0.32)	(0.75)	(0.99)	(0.49)
$FS_t^{INT-} * RSNewsTone_t^{US}$	**-0.031****	**-0.068*****	**-0.11****	-0.088	-0.11
	(0.02)	**(0.01)**	**(0.03)**	(0.26)	(0.21)

Control variables: LS_t^{US+}, LS_t^{US-}, FS_t^{INT+}, FS_t^{INT-}, $RSNewsTone_t^{US}$, $USRet_t$, $USRet_{t-1}$, $USRet_{t-2}$, $USRet_{t-3}$, $USRet_{t-4}$, $USRet_{t-5}$

Obs.	238	238	238	238	238
R2	0.05	0.08	0.12	0.14	0.16

Analysis of Non-U.S. investors' Foreign Sentiment

- Conclusion

- Non-U.S. investors' foreign sentiment is related to U.S. market returns in the same way as U.S. investors' foreign sentiment is related to international market returns.

- Investors' foreign sentiment is driven by overreaction to each other's bad news, but their local sentiment is not related to such overreaction.

Conclusion

- Foreign sentiment predicts return reversals in the destination markets and is distinct from local sentiment measures in both the origin and the destination markets.

- We identify overreaction to the destination-market local news as one important channel driving the foreign sentiment effect.

- Worldwide investors' tendency of overreacting to each other's bad news and such sentiment seems to play a symmetric role across the U.S. and international markets