Discussion of “Knowledge is power: A field experiment in the Chinese and US stock markets” by Wong, Xue, Zhang, and Zhao

By Xiumin Martin

ABFER 2022

Summary

- **Super interesting research question**
  - Does knowing accruals property affect investors' pricing of accruals?
  - Yes!

Method

- Cool field experiment
- US and Chinese market
- Information treatment via messaging

Summary

- **Findings:**
  - **Knowledge of accruals' behavior reduces accruals mispricing.**
  - **The effect of treatment is stronger in the Chinese market than in the US.**

Road map

- **Related literature** and **contribution** – some inconsistency

- **Suggestions**
  - Direction of analysis
  - Experimental design
    - Information treatment
    - Contamination (or externality of information) within an investor
  - Empirical results

Literature on accruals pricing

- **Sloan (1996) and Xie (2001)**
  - Accruals and discretionary accruals are mispriced – High accruals earns lower returns and vice versa.
- **Khan (2007) – risk factor**
  - Accruals anomaly is likely driven by risk factors.
- **Accruals anomaly ceases to exist (Greens et al. 2010)**
  - **Accruals anomaly disappears in the US.**
- **Pincus Rajgopal and Venkatachalam (2007)**
  - **Accruals anomaly only occurs in four countries (Australia, Canada, the UK and the US).**

Greens et al. (2010) –Accruals anomaly disappears (36-month rolling window)

	EXCESS_VWRET	*SMB*	*HML*	*UMD*	Raw hedge returns	Risk-adjusted hedge returns
Panel A: 4/89-12/95 (81 months)						
Mean return	0.75%	–0.11%	0.12%	1.11%	1.17%	0.92%
Std. dev. of returns	3.37%	2.32%	2.24%	2.70%	4.09%	3.89%
t-stat. on mean return	1.99	–0.41	0.48	3.72	2.58	2.12
Sharpe ratio	0.22	–0.05	0.05	0.41	0.29	0.24
Market correlation	1.00	0.17	–0.33	0.06	–0.30	–0.26
$\rho\{1\}$ autocorrelation	–0.04	0.22	0.36	0.13	0.04	0.01
Panel B: 1/96-12/03 (96 months)						
Mean return	0.88%	0.34%	0.45%	0.99%	0.87%	0.46%
Std. dev. of returns	5.22%	4.89%	4.48%	6.55%	6.31%	5.82%
t-stat. on mean return	1.65	0.68	0.98	1.49	1.36	0.77
Sharpe ratio	0.17	0.07	0.10	0.15	0.14	0.08
Market correlation	1.00	0.18	-0.57	–0.25	–0.02	0.08
$\rho\{1\}$ autocorrelation	0.05	–0.09	0.04	–0.07	0.09	0.10
Panel C: 1/04-12/08 (60 months)						
Mean return	–0.03%	0.07%	0.32%	0.81%	–0.48%	–0.41%
Std. dev. of returns	4.06%	2.20%	1.88%	3.50%	3.54%	3.33%
t-stat. on mean return	–0.06	0.23	1.30	1.80	–1.04	–1.18
Sharpe ratio	–0.01	0.03	0.17	0.23	–0.13	–0.15
Market correlation	1.00	0.41	0.09	–0.23	0.03	0.09
$\rho\{1\}$ autocorrelation	0.37	–0.03	0.35	–0.16	–0.08	–0.08

Pincus Rajgopal and Venkatachalam (2007)

Panel C: Mishkin Tests of the Components of Earnings—By Country

$$NI_{t+1} = \gamma_0 + \gamma_1 ACC_t + \gamma_2 OCF_t + \varepsilon_{t+1} \quad (1)$$

$$AR_{t+1} = \beta_0 + \beta_1(NI_{t+1} - \gamma_0^* - \gamma_1^* ACC_t - \gamma_2^* OCF_t) + \nu_{t+1} \quad (2)$$

Country	n	β_1	γ_1	γ_1^*	γ_2	γ_2^*	F-statistic for $\gamma_1 = \gamma_1^*$	F-statistic for $\gamma_2 = \gamma_2^*$
Common Law Countries:								
Australia	1883	2.049	0.460	0.828	0.588	0.579	9.29**	0.02
Canada	2816	1.676	0.590	0.701	0.669	0.712	4.41*	0.34
Hong Kong	553	1.049	0.533	0.482	0.657	0.426	0.03	0.92
India	1245	2.097	0.647	0.722	0.691	0.629	0.21	0.21
Malaysia	2215	0.878	0.612	0.118	0.605	−0.094	7.04**	23.27**
Singapore	1471	1.839	0.631	0.271	0.619	0.289	8.00**	11.99**
Thailand	1369	2.389	0.603	0.632	0.603	0.317	0.07	8.22**
United Kingdom	6482	1.236	0.548	0.985	0.649	0.643	24.81**	0.02
United States	19039	2.089	0.613	0.879	0.717	0.777	33.38**	2.71^
Code Law Countries:								
Denmark	504	1.391	0.592	0.604	0.582	0.500	0.23	0.77
France	2782	1.656	0.713	0.717	0.732	0.509	0.01	6.76**

The discussion of the comparison between US and China market

- Indeed there are many institutional differences between the two markets.
- What differences will have implication for accruals pricing?
- Need to focus on those!
  - Retail vs. institutional ownership
  - Information environment
  - "Finding Anomalies in China" Kewei Hou, Fang Qiao, and Xiaoyan Zhang (2021)

TABLE 1
Medians of Various Firm-Year Characteristics across Countries

Country	n	*SIZE* (U.S. $ mill)	*BM*	*EP*	*NI*	*OCF*	*ACC*	*Return*
Common Law Countries:								
Australia	1883	122.27	0.58	0.05	0.04	0.07	−0.04	0.03
Canada	2816	196.75	0.50	0.03	0.03	0.07	−0.04	0.01
Hong Kong	553	111.83	1.25	0.06	0.03	0.04	−0.02	−0.06
India	1245	89.54	0.91	0.08	0.06	0.08	−0.02	−0.07
Malaysia	2215	50.75	0.74	0.04	0.03	0.05	−0.02	−0.05
Singapore	1471	62.97	0.83	0.04	0.02	0.05	−0.03	−0.08
Thailand	1369	21.89	1.07	0.07	0.04	0.08	−0.05	0.01
United Kingdom	6482	139.30	0.47	0.05	0.06	0.09	−0.04	−0.01
United States	19039	369.51	0.41	0.04	0.04	0.07	−0.04	0.02
Code Law Countries:								
Denmark	504	88.06	0.80	0.07	0.04	0.07	−0.04	−0.08
France	2782	109.96	0.54	0.04	0.03	0.07	−0.04	−0.02
Germany	2483	142.84	0.50	0.04	0.03	0.07	−0.05	−0.03
Indonesia	839	32.37	0.65	0.04	0.02	0.04	−0.03	−0.14
Italy	785	232.81	0.60	0.04	0.03	0.06	−0.03	−0.08
Japan	13822	122.73	0.94	0.02	0.01	0.04	−0.03	−0.12
The Netherlands	842	208.58	0.43	0.06	0.06	0.10	−0.04	−0.08
Spain	678	338.17	0.59	0.06	0.04	0.09	−0.04	0.03
Sweden	777	71.77	0.52	0.02	0.03	0.05	−0.03	−0.16
Switzerland	815	227.89	0.66	0.06	0.04	0.08	−0.04	0.00
Taiwan	627	413.86	0.61	0.03	0.03	0.06	−0.03	−0.15

Contribution

- What causes accruals anomaly?

Experimental design and underlying assumptions

	T1	T2	C	S
Treatment	Conceptual +Alert of EA	Conceptual + statistical +Alert of EA	Alert of EA	None
Experiment period : 7 posts before, 1 on, and 7 posts after the EA. The period spans between Jan and May for China, and from Jan to Dec for US.				

T1 –Conceptual knowledge

Highlight

Firms' reported earnings often differ from their actual cash flows. This difference is referred to as "accruals" and represents the component of earnings that have not yet been received. Due to estimation errors, the value of accruals is not necessarily equal to the amount of cash that is received, causing high accruals in the current period in relation to low earnings in subsequent periods. This effect is called low earnings persistence of accruals.

Example

In 2019, company A reports earnings of $100 million (i.e., operating income after depreciation). Cash flows and accruals are $20 million and $80 million, respectively. Company B also reports earnings of $100 million. Its cash flows and accruals are $70 million and $30 million, respectively.

Based on the concept of low earnings persistence of accruals, holding all other factors constant, A is expected to have lower earnings than B in 2020.

- Why not discuss low accruals (or negative accruals) as well? This non-neutral presentation might mislead investors (See Fig 1).
- Might also consider to partition in to positive (high) and negative accruals (low) group.
- What about possible earnings management resulting in accruals?

Underlying assumptions

- The experiment was conducted over a long time (half a year in China and one year in the US).
- If we believe each individual has a set of firms in their investment portfolio, will the awareness of accruals property for one stock generate information externality for other stocks?
- How to addresses this issue – Make comparison of accruals pricing between the pre and post the experiment across groups.

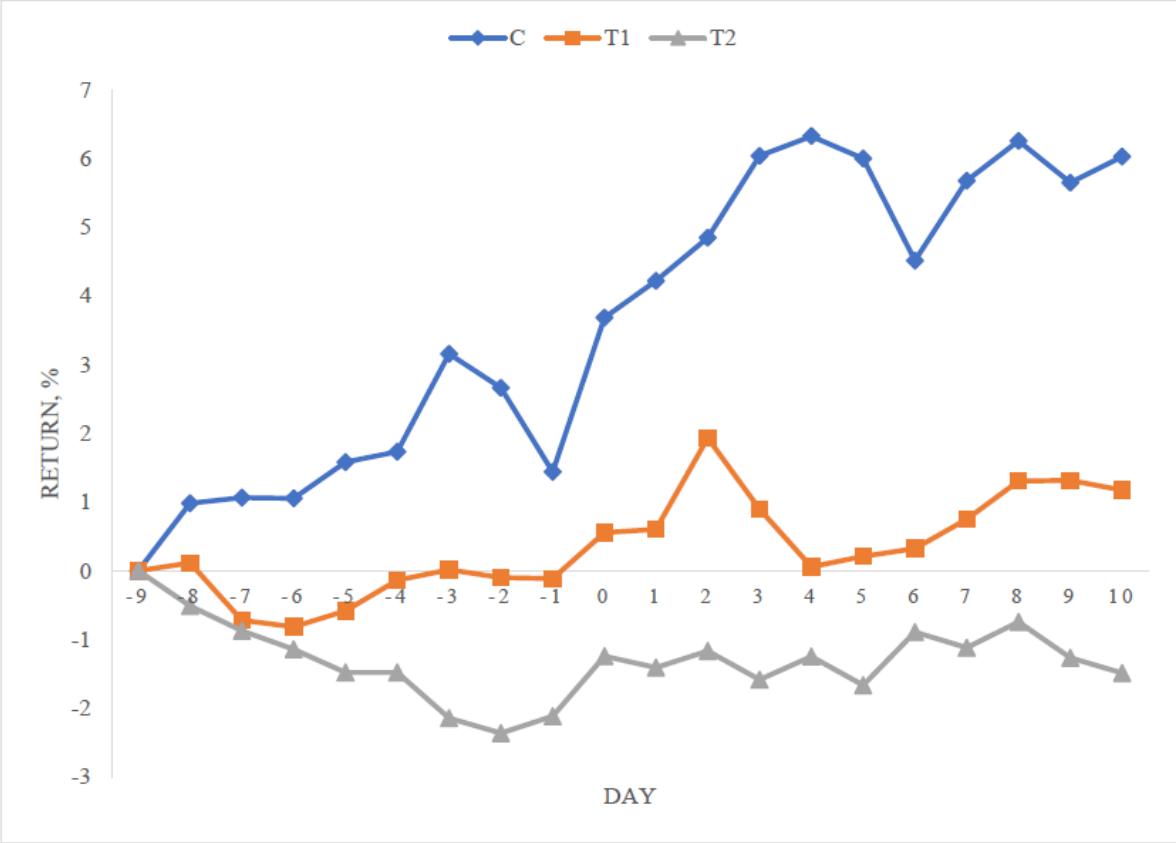
Externality of information

Empirical analyses – Long-run effect

- Can you look at the long-run effect of the experiment?
- This analysis will allow to shed light on whether financial literacy will produce long-lasting effect or not, and this carries policy implication.

Empirical results

Figure 1—Accruals Announcement Returns during the Experiment Window for Stocks with High Accruals in the Chinese Stock Market



- Where is group S?
- It will be great to show the results based on the pre-period.
- It will be important to show the pattern around EAs for low accruals stocks.
- Calculate hedge portfolio returns

Empirical results – Portfolio approach

- Why not use hedge portfolio approach to analyze whether accruals are mispriced? (Sloan 1996, Xie 2001…..)

- Regression framework treat every stock equally, while the portfolio approach considers both equally weighted and value weighted return.

- Past returns and trading volume should be included as controls (Lee and Swaminathan 2002)

Empirical analyses – Mishkin test

- Why do not use conduct Mishkin test?
  - This test allows readers to gauge the pricing errors, the predictability of accruals for future earnings.
  - This test will also speak directly to the effect of T2 on mispricing.

Short-window results

Table 3—Testing for Accruals Mispricing

Panel A: *CAR*(0,1)

Samples

	The Chinese market		The US market	
	(1)	(2)	(3)	(4)
Accruals	**0.060*** **		**0.150***	
	(2.73)		**(1.74)**	
$Accruals_{UD}$		**0.031***		**-0.039**
		(1.95)		**(-0.95)**
SUE	0.393**	0.417***	0.383**	0.396**
	(2.53)	(2.68)	(1.98)	(2.05)
Industry and month Fes	Yes	Yes	Yes	Yes
Observations	573	573	595	595
R-squared	0.172	0.167	0.281	0.278

1. Standard errors should be clustered at the EA day level, or EA day-industry level to take into account cross-sectional correlation in returns.
2. Why the sum of coefficients on Treat*accruals + Accruals <0?
3. In the US, why accruals are negatively loaded for the treatment group but insignificant for the control group?

Sample T1 & T2

Table 4—Financial Education and Pricing of Accruals in a Short-term Window

	The Chinese market		The US market	
	(1)	(2)	(3)	(4)
Treat×*Accruals*	**-0.030*** **		**-0.256*** **	
	(-3.47)		**(-4.06)**	
Accruals	0.020***		-0.008	
	(3.33)		(-0.15)	
Treat×$Accruals_{UD}$		**-0.058*** **		**-0.058** **
		(-4.00)		**(-1.97)**
$Accruals_{UD}$		0.059***		0.028
		(6.03)		(1.33)
Treat	-0.011***	-0.009***	-0.011**	0.001
	(-5.53)	(-4.12)	(-2.48)	(0.44)
SUE	0.466***	0.446***	0.588***	0.545***
	(4.99)	(4.80)	(5.27)	(4.84)
Industry and month FEs	Yes	Yes	Yes	Yes
Observations	1,711	1,711	1,792	1,792
R-squared	0.095	0.107	0.196	0.179

Long-window results

Group S

Panel B: *CAR*(11,251)

	The Chinese market		The US market	
	(1)	(2)	(3)	(4)
Accruals	**-0.583****		**-0.670***	
	(-2.40)		**(-1.96)**	
$Accruals_{UD}$		**-0.446*****		**-0.095**
		(-2.60)		**(-0.58)**
SUE	-1.909	-1.990	-1.380*	-1.432*
	(-1.12)	(-1.17)	(-1.81)	(-1.88)
Industry and month Fes	Yes	Yes	Yes	Yes
Observations	573	573	595	595
R-squared	0.193	0.195	0.389	0.383

Group C,T1,T2

Table 5—Financial Education and Pricing of Accruals in a Long-term Window

	The Chinese market		The US market	
	(1)	(2)	(3)	(4)
Treat×Accruals	**0.278*****		**1.635*****	
	(3.21)		**(5.20)**	
Accruals	-0.347***		-2.251***	
	(-5.74)		(-9.05)	
$Treat \times Acccruals_{UD}$		**0.844*****		**0.723*****
		(5.77)		**(4.91)**
$Accruals_{UD}$		-0.628***		-0.551***
		(-6.41)		(-5.23)
Treat	-0.073***	-0.094***	0.012	-0.074***
	(-3.53)	(-4.49)	(0.54)	(-5.11)
SUE	1.880**	2.095**	1.239**	1.160**
	(2.01)	(2.25)	(2.23)	(2.05)
Industry and month FEs	Yes	Yes	Yes	Yes
Observations	1,711	1,711	1,790	1,790
R-squared	0.136	0.142	0.337	0.316

- Why SUE is loaded so differently?
- Should you consider to include SUE*Treat?

Long-window results

Table 5—Financial Education and Pricing of Accruals in a Long-term Window

	The Chinese market		The US market	
	(1)	(2)	(3)	(4)
Treat×Accruals	**0.278*** **		**1.635*** **	
	(3.21)		**(5.20)**	
Accruals	-0.347***		-2.251***	
	(-5.74)		(-9.05)	
Treat×Acccruals$_{UD}$		**0.844*** **		**0.723*** **
		(5.77)		**(4.91)**
Accruals$_{UD}$		-0.628***		-0.551***
		(-6.41)		(-5.23)
Treat	-0.073***	-0.094***	0.012	-0.074***
	(-3.53)	(-4.49)	(0.54)	(-5.11)
SUE	1.880**	2.095**	1.239**	1.160**
	(2.01)	(2.25)	(2.23)	(2.05)
Industry and month FEs	Yes	Yes	Yes	Yes
Observations	1,711	1,711	1,790	1,790
R-squared	0.136	0.142	0.337	0.316

- Can you test the statistical significance of the sum of (Treat * accruals + accruals) <0?
- The return-accruals sensitivity is so different across the two markets.

With smart money in the US, the education material still significantly mitigates the accruals mispricing! ???

Long- vs. Short-window results

Table 4—Financial Education and Pricing of Accruals in a Short-term Window

	The Chinese market		The US market	
	(1)	(2)	(3)	(4)
Treat×Accruals	**-0.030*** **		**-0.256*** **	
	(-3.47)		**(-4.06)**	
Accruals	0.020***		-0.008	
	(3.33)		(-0.15)	
Treat×Accruals$_{UD}$		**-0.058*** **		**-0.058** **
		(-4.00)		**(-1.97)**
Accruals$_{UD}$		0.059***		0.028
		(6.03)		(1.33)
Treat	-0.011***	-0.009***	-0.011**	0.001
	(-5.53)	(-4.12)	(-2.48)	(0.44)
SUE	0.466***	0.446***	0.588***	0.545***
	(4.99)	(4.80)	(5.27)	(4.84)
Industry and month FEs	Yes	Yes	Yes	Yes
Observations	1,711	1,711	1,792	1,792
R-squared	0.095	0.107	0.196	0.179

Table 5—Financial Education and Pricing of Accruals in a Long-term Window

	The Chinese market		The US market	
	(1)	(2)	(3)	(4)
Treat×Accruals	**0.278*** **		**1.635*** **	
	(3.21)		**(5.20)**	
Accruals	-0.347***		-2.251***	
	(-5.74)		(-9.05)	
Treat×Acccruals$_{UD}$		**0.844*** **		**0.723*** **
		(5.77)		**(4.91)**
Accruals$_{UD}$		-0.628***		-0.551***
		(-6.41)		(-5.23)
Treat	-0.073***	-0.094***	0.012	-0.074***
	(-3.53)	(-4.49)	(0.54)	(-5.11)
SUE	1.880**	2.095**	1.239**	1.160**
	(2.01)	(2.25)	(2.23)	(2.05)
Industry and month FEs	Yes	Yes	Yes	Yes
Observations	1,711	1,711	1,790	1,790
R-squared	0.136	0.142	0.337	0.316

Why the loading for accruals are negative for both short and long window for C group?

Comments in the post

- What did investors say after receiving the education material?
  - This is to gauge the update of investors' belief.
  - If possible, some textual analysis might help strengthen the inferences and confidence in the findings.
  - Are results robust for raw accruals?

Conclusion

- Enjoy reading the paper –very well designed field experiments
- A fruitful path is to understand how education interacts with country-specific institutions to effect the accruals anomaly.
- Might consider to drop the US analysis – the results are puzzling!

Best luck with the paper!