

Flying under the radar: The effects of short-sale disclosure rules on investor behavior and stock prices

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1.Introduction_Background

- Disclosure requirements for investors' holdings are a prevalent feature of financial market regulation.
- Significant efforts have been made to increase the transparency of investors' long positions. Less regulatory attention has centered on their short positions.
- The European Union (EU) in 2012 adopted a uniform rule, requiring investors to publish any net short position that reaches a threshold of 0.5% of the shorted stocks' issued share capital one day after that position occurs.

1.Introduction_Background

- EU's short-selling regulation(a two-tier reporting system)
 - a net short position must be reported **to the regulator** if the position reaches **0.2%** of the issued share capital of the company shorted and for each **0.1%** threshold above that.
 - a net short position must be disclosed **to the public** if the position reaches **0.5%** of the issued share capital of the company shorted and for each **0.1%** above that.
 - notifications must be updated when values fall below the relevant thresholds.

1.Introduction_Literatures

About disclosure requirements:

- Nasdaq, 2015; NYSE, 2015: greater transparency levels the playing field for investors, exposes potentially abusive short selling, and helps improve price discovery in the market;
- SEC, 2014: the timely publication of short positions can pose a threat to proprietary investment strategies(investors would reduce their short-selling activities to protect private information and engage less in arbitrage trading→hampering price discovery)

1.Introduction_Literatures

About the choice of investors:

- Goldstein and Guembel, 2008: coordinate predatory short selling and manipulate stock prices
- Wermers, 2001 ; AIMA/MFA, 2013: Having identified the strategy, the competitors can then employ it even before the original investor and thus can arbitrage away the prospective gains

1.Introduction_Literatures

- How disclosure requirements for short positions affect investors' behavior?

Prefer to disclose	Avoid disclosing
induce other investors to sell the target stock	protect their proprietary trading strategy from reverse engineering by competitors
make prices converge faster to their fundamental value	disclosure could make them more costly or difficult to maintain and close

- reverse engineering: use statistical techniques to past disclosures to infer the investor's underlying trading strategy

1.Introduction_Motivations

- Whether investors trade strategically around the disclosure threshold?
 - Yes,they avoid crossing the disclosure threshold.
- Why the investors behave like that?
 - Protect their underlying investment strategy against reverse engineering by competitors.
- If so, to what extent their behavior affects stock prices?
 - Prices appear to adjust more slowly.

1.Introduction_Contributions

- Our findings contribute to the long-standing debate about the effects of information disclosure in financial markets.
- Our study adds to the literature on limits to arbitrage and on short-sale constraints in particular.
- We establish a direct link between investors' disclosure avoidance and slower price discovery for stocks affected.

2.Data

- Public and confidential short position disclosures from the German Federal Financial Supervisory Authority
- 2012.11.05-2015.03.31
- Restrict the sample to common equity traded on the German regulated market
- Short position bins: 0.20-0.29%(0.2); 0.40-0.49%(0.4);

Date	Position holder	Issuer	ISIN	Position size
October 29, 2015	Marshall Wace LLP	Deutsche Lufthansa AG	DE0008232125	0.59%
November 2, 2015	Marshall Wace LLP	Deutsche Lufthansa AG	DE0008232125	0.61%
November 5, 2015	Marshall Wace LLP	Deutsche Lufthansa AG	DE0008232125	0.71%
November 25, 2015	Marshall Wace LLP	Deutsche Lufthansa AG	DE0008232125	0.84%
November 30, 2015	Marshall Wace LLP	Deutsche Lufthansa AG	DE0008232125	0.91%
December 8, 2015	Marshall Wace LLP	Deutsche Lufthansa AG	DE0008232125	0.89%
December 14, 2015	Marshall Wace LLP	Deutsche Lufthansa AG	DE0008232125	0.78%
December 17, 2015	Marshall Wace LLP	Deutsche Lufthansa AG	DE0008232125	0.69%
November 22, 2015	Marshall Wace LLP	Deutsche Lufthansa AG	DE0008232125	0.59%
January 22, 2016	Marshall Wace LLP	Deutsche Lufthansa AG	DE0008232125	0.44%

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2.Data

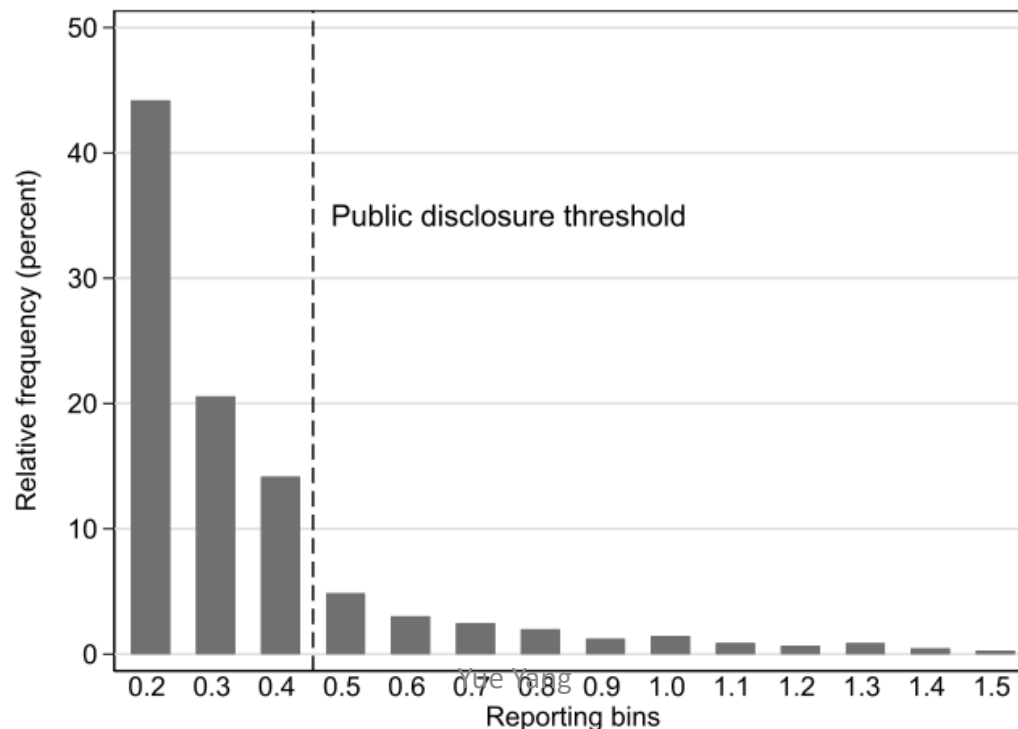
- the median values of various stock characteristics for stocks:

Characteristic	(1) Stocks without short position notifications	(2)	(3) Stocks with short position notifications		(4)	(5)	(6)
		All	Public	Confidential			
Share of stocks in regulated market	78.04 %	21.96%	9.05%	12.91%			
Median values					<i>p</i> -value (1)=(2)	<i>p</i> -value (3)=(4)	
Market value (millions of US dollars)	73.7	2,247.7	2,010.7	2,422.4	(0.000)	(0.356)	
Book-to-market ratio	0.66	0.51	0.54	0.50	(0.000)	(0.278)	
Daily turnover (percent)	0.07	0.32	0.37	0.29	(0.000)	(0.034)	
Amihud illiquidity	1.024	0.003	0.003	0.004	(0.000)	(0.927)	
Bid-ask spread (percent)	3.51	0.65	0.65	0.65	(0.000)	(0.967)	
Return volatility (percent)	2.50	1.93	2.11	1.82	(0.000)	(0.010)	
Institutional ownership (percent)	1.76	29.67	30.39	29.30	(0.000)	(0.443)	
Share of lendable stocks (percent)	0.50	13.46	12.77	14.17	(0.000)	(0.472)	
Indicative fee (per annum percent)	1.50	0.50	0.50	0.50	(0.121)	(1.000)	

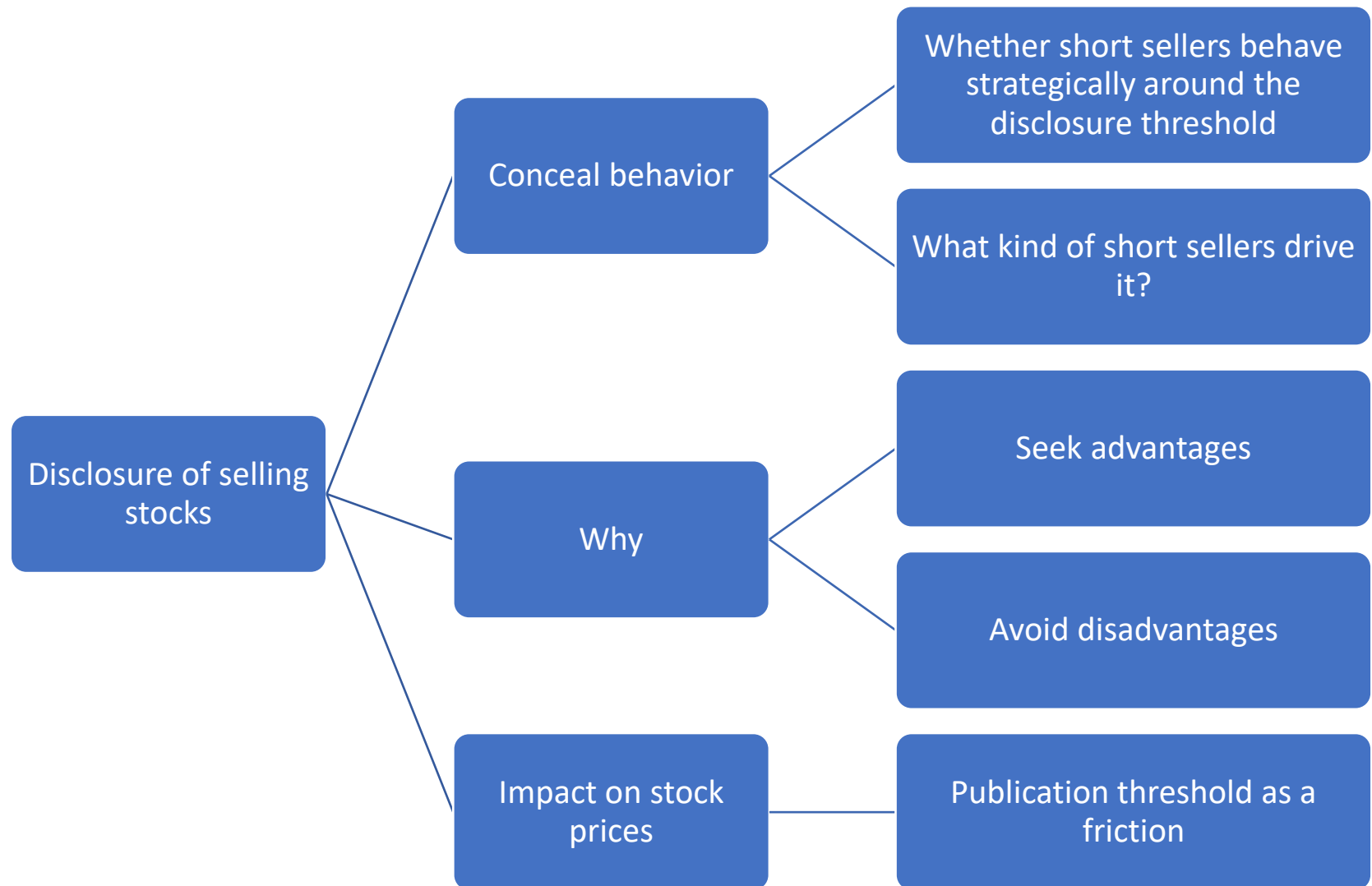
2.Data

- the frequency distribution of days with an open short position notification over the different reporting bins

Panel A: Overall sample



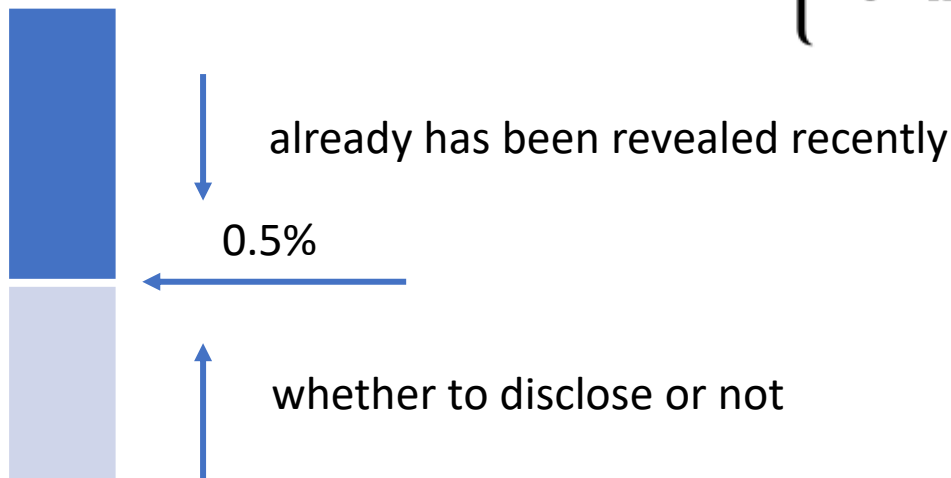
3.Methods



4.Results _Unusual bunch

- Strategic considerations should be particularly influential when the short seller faces the initial decision to disclose a position.
- investor: i ; stock: j ; day: t

$$\text{Position record } high_{i,j,t} = \begin{cases} 1 & \text{if } bin_{i,j,t} = \max_{s \leq t} bin_{i,j,s} \\ 0 & \text{if } bin_{i,j,t} < \max_{s \leq t} bin_{i,j,s} \end{cases}$$



4.Results_Unusual bunch

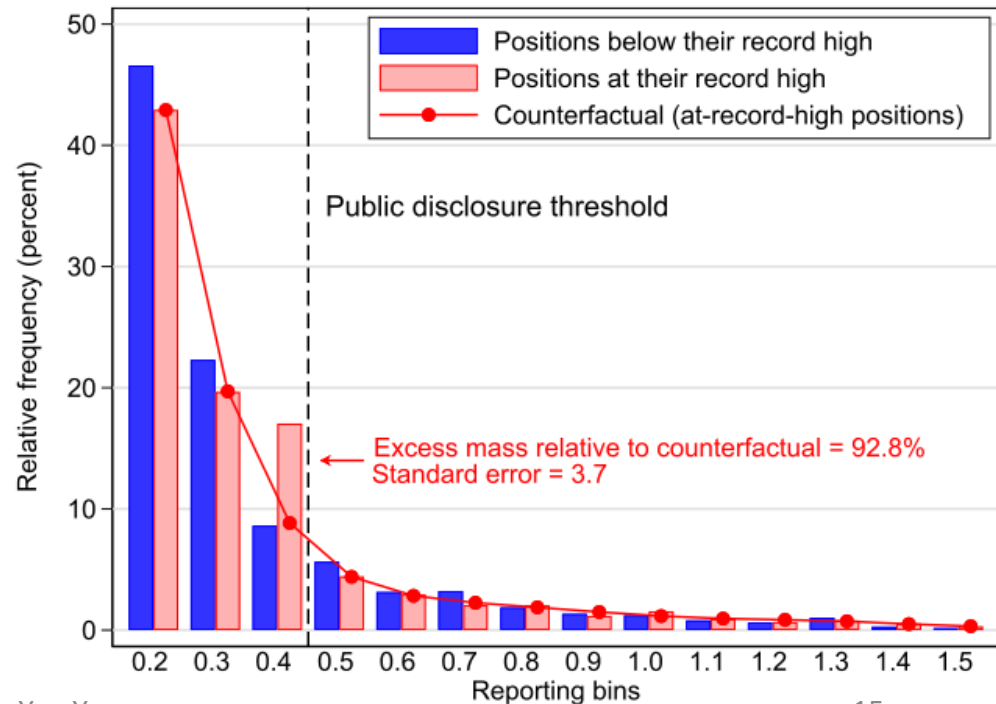
Is there a bunch of unusual positions in '0.4' bin?

- a counterfactual distribution for positions at the record high
- the bunching estimator proposed by Chetty et al. (2011)

2 questions

How long do they stay in bins?

Why drives the unusual bunch in '0.4' bin?



4.Results_Time spent just below the disclosure threshold

Do investors stay in '0.4' bin for unusually long time?

- Short sellers spend an unusually long time just below the disclosure threshold
- The long time spend by investors just below the disclosure threshold is entirely driven by positions

	<i>k</i>	Bin	Overall			Positions at their record high			Positions below their record high		
			Mean duration	Difference Row 3 - <i>k</i>	<i>p</i> -value	Mean duration	Difference Row 3 - <i>k</i>	<i>p</i> -value	Mean duration	Difference Row 3 - <i>k</i>	<i>p</i> -value
undisclosed	(1)	0.2	18.3	2.2**	(0.019)	22.3	3.6**	(0.012)	14.0	-2.4**	(0.039)
	(2)	0.3	17.0	3.6***	(0.000)	21.3	4.6***	(0.002)	12.6	-1.0	(0.376)
	(3)	0.4	20.6			26.0			11.7		
disclosed	(4)	0.5	14.3	6.2***	(0.000)	16.7	9.3***	(0.000)	11.8	-0.1	(0.919)
	(5)	0.6	13.7	6.8***	(0.000)	17.4	8.5***	(0.001)	9.9	1.8	(0.238)
	(6)	0.7	13.3	7.3***	(0.000)	15.8	10.1***	(0.001)	11.2	0.5	(0.772)
	(7)	0.8	13.6	7.0***	(0.001)	17.2	8.8***	(0.008)	10.0	1.6	(0.379)
	(8)	0.9	11.9	8.7***	(0.000)	14.1	11.8***	(0.002)	9.7	2.0	(0.355)
	(9)	≥ 1.0	12.6	8.0***	(0.000)	16.6	9.4***	(0.000)	8.6	3.1***	(0.004)

4.Results_Position increases beyond the disclosure threshold

Who drives it?

- whether investors' next position change is an increase or decrease

reasons

wait below the threshold for a favorable time to ultimately cross it

avoid disclosure entirely

			Overall			Positions at their record high			Positions below their record high		
	<i>k</i>	Bin	Relative frequency of increase	Difference Row 3 - <i>k</i>	<i>p</i> -value	Relative frequency of increase	Difference Row 3 - <i>k</i>	<i>p</i> -value	Relative frequency of increase	Difference Row 3 - <i>k</i>	<i>p</i> -value
undisclosed	(1)	0.2	0.364	-0.010	(0.469)	0.347	-0.010	(0.581)	0.380	-0.001	(0.947)
	(2)	0.3	0.391	-0.037**	(0.014)	0.423	-0.085***	(0.000)	0.360	0.018	(0.416)
	(3)	0.4	0.354			0.338			0.379		
disclosed	(4)	0.5	0.408	-0.054***	(0.007)	0.514	-0.176***	(0.000)	0.302	0.076***	(0.009)
	(5)	0.6	0.476	-0.122***	(0.000)	0.562	-0.225***	(0.000)	0.395	-0.017	(0.624)
	(6)	0.7	0.440	-0.086***	(0.001)	0.604	-0.266***	(0.000)	0.308	0.071**	(0.048)
	(7)	0.8	0.449	-0.095***	(0.001)	0.648	-0.310***	(0.000)	0.266	0.113***	(0.006)
	(8)	0.9	0.477	-0.123***	(0.000)	0.702	-0.364***	(0.000)	0.279	0.100***	(0.032)
	(9)	≥ 1.0	0.474	-0.120***	(0.000)	0.682	-0.345***	(0.000)	0.275	0.103***	(0.000)

4.Results_Secrecy at the investor level

Why investor prefer to never cross threshold?

- each investor-stock pair (i, j), we first calculate the maximum position value reached:

$$Position\ maximum_{i,j} = \max_{t=1,2,\dots,T_{i,j}} bin_{i,j,t}$$

- maximum position value reached by each investor across all positions:

$$Investor\ maximum_i = \max_{j=1,2,\dots,S_i} \max_{t=1,2,\dots,T_{i,j}} bin_{i,j,t}$$

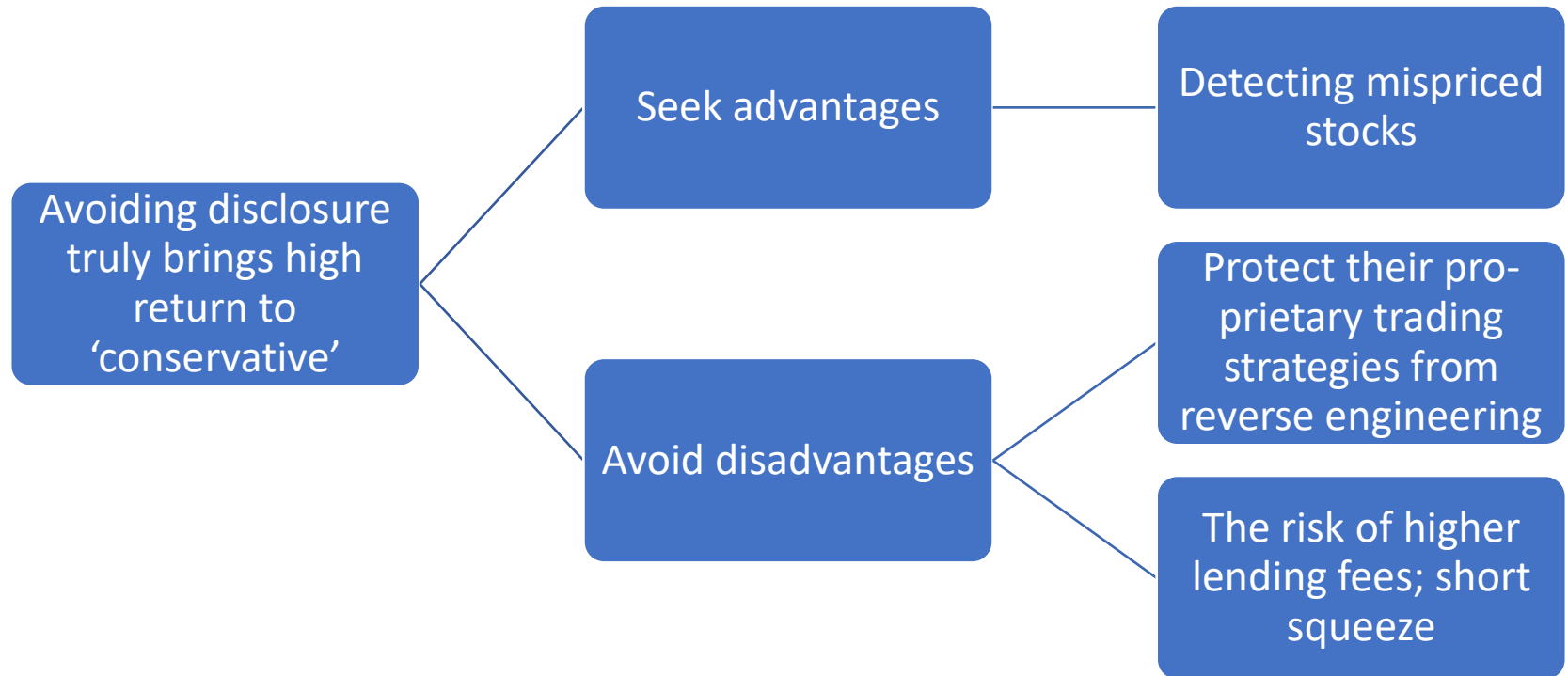
- If position max = investor's max(=0.4): investor who never cross the threshold(conservative)

4.Results_Secrecy at the investor level

- secretive positions: a portfolio of positions with a maximum of 0.4
- non-secretive positions: a portfolio of positions with a maximum of 0.5
- secretive positions have an informational advantage compared with non-secretive positions.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Positions max.: 0.4 bin		Positions and investor max.: 0.4 bin		Positions max.: 0.5 bin		Positions max.: Difference in means		Positions and investor max.: Difference in means	
Model	α	t -statistic	α	t -statistic	α	t -statistic	Δ	t -statistic	Δ	t -statistic
CAPM	-4.15*	(-1.72)	-4.82	(-1.50)	1.34	(0.57)	-5.49***	(-2.86)	-6.16**	(-2.57)
Fama-French	-4.74***	(-2.66)	-5.58**	(-2.39)	0.68	(0.39)	-5.42***	(-2.89)	-6.27***	(-2.66)
Carhart	-4.12**	(-2.36)	-4.79**	(-2.14)	0.75	(0.41)	-4.87***	(-2.72)	-5.54***	(-2.58)

4.Results_Why avoid of position disclosure



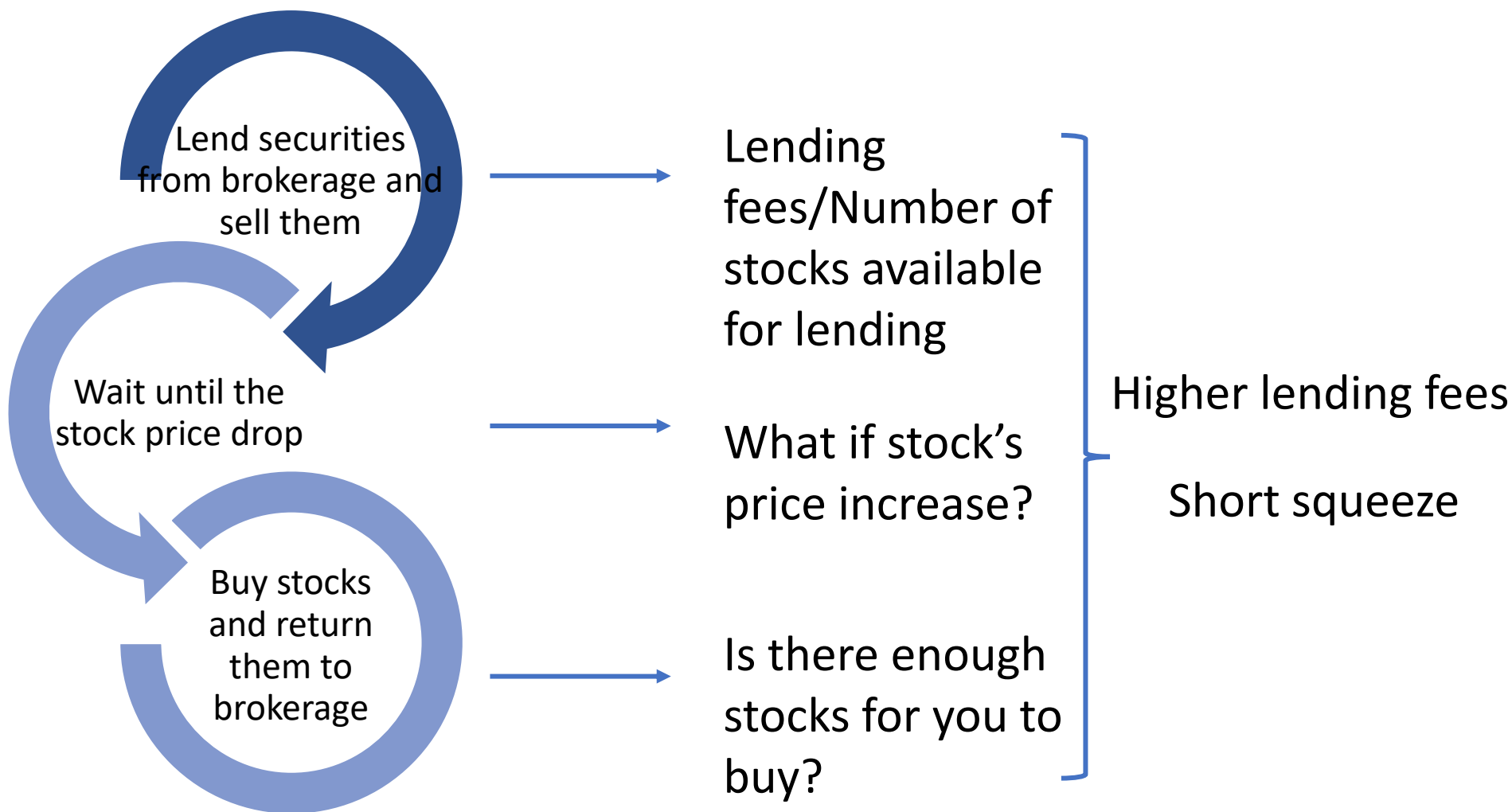
4.Results_Why avoid of position disclosure

Seek advantages: Detecting mispriced stocks

- If profits from secretive positions are based on shorting stocks that are overpriced, the overpricing will be corrected when public cash flow news arrives. → **Profits should be particularly high on days with news.**

Model	(1)	(2)	(3)	(4)
	All days	Days with Earnings news	Ad hoc news	No firm news
Carhart	-4.12** (-2.36)	-27.21 (-1.35)	-67.84*** (-3.31)	-2.15 (-1.32)
Number of observations	63,390	2,013	1,169	60,390

4.Results_Why avoid of position disclosure



4.Results_Why avoid of position disclosure

Avoid disadvantages: protect the trading strategies from reverse engineering

- SDI(Sun et al. (2012)): the higher the SDI, the farther a fund is from its peer group and the more distinctive is its strategy

Variable	(1) Position max.: 0.4 bin	(2) Position max.: 0.4 bin	(3) Position max.: 0.5 bin	(4) Position max.: 0.5 bin	(5) Difference in means	(6) Difference in means
	N	Mean	N	Mean	Δ	p-value
Strategy Distinctiveness Index ^{VW}	9,511	0.74	2,483	0.56	0.17***	(0.002)
Strategy Distinctiveness Index ^{EW}	9,511	0.72	2,483	0.63	0.09**	(0.030)

4.Results_Implications for stock prices

Publication threshold as a friction

- If the publication threshold restricts short selling for investors, the price discovery process should be slower if these secretive investors hold positions just below the threshold→
- Stocks should be temporarily mispriced + return predictability will be particularly pronounced

Secretive position
just below threshold $_{i,j,t}$

$$= \begin{cases} 1 & \text{if } (Position\ maximum_{i,j} = 0.4) \cap (bin_{i,j,t} = 0.4) \\ 0 & \text{otherwise.} \end{cases}$$

Model	Maximum reporting bin reached
	0.4
CAPM	-5.46** (-2.00)
Fama-French	-6.13*** (-2.83)
Carhart	-5.66** (-2.57)

5. Conclusions

- A considerable proportion of short sellers seek to avoid crossing the disclosure threshold, in particular those that are well-informed.
- Avoiding disclosure of short positions is part of the investors' general policy of secrecy, designed to protect their underlying investment strategy against reverse engineering by copycat investors.
- The disclosure threshold is binding, and stocks exhibit a negative abnormal return, such that prices appear to adjust more slowly to private information.