The Dollar Profits to Insider Trading

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Motivation I – Common prior

Corporate insiders generate substantial abnormal returns

Study	**Estimate of abnormal return**
Cicero and Wintoki 2015	2.5% for purchases (1m)
Cohen, Malloy, and Pomorski JF 2012	9.8% annualized value-weighted
Wang, Shin, and Francis JFQA 2012	3.9% (2.1%) for CEO and CFO purchases (sales) (3m)
Jeng, Metrick, and Zeckhauser REStat 2003	6% for purchases (12m)
Lakonishok and Lee RFS 2001	4.8% for buy-sell long-short pf (12m)

Motivation II – Returns ≠ profits

Corporate insiders generate substantial abnormal returns

BUT

- Returns (alpha) can differ from extracted economic value (e.g. Berk and van Binsbergen 2015)

This paper:

- **Returns ≠ profits when trade size and frequency are choice variables**
- **Can dollar profits tell us more about insider trading?**

Motivation III – Why care about dollar profits?

Theory I: Informed (insider) trading

- Quantities chosen strategically to balance costs and benefits (e.g. Kyle 1985, Huddart et al. 2001, Lenkey 2014)
  - \+ How much the insider cares about trading profits
  - – Insider's concern for adverse selection costs or litigation risk
- These determinants can create a wedge between returns and profits

Theory II: Agency

- Insiders' returns as a measure of opportunism (e.g. Ali and Hirshleifer 2017)
- But individual utility more strongly linked to $ profits than % returns
- Dollar profits = f(abnormal return, trade quantities)
- Joint distribution of returns and trade quantities unknown

Research questions

1. Given their superior information, how much value (dollar profits) do insiders extract?

2. What drives dollar profits and trade quantities?
    a) Do predictors of returns also predict trade quantities and profits?
    b) Trading intentions
    c) Monitoring

Contribution

1. Literature focuses on percentage returns
   - ➢ First to analyze trade quantities and dollar profits

2. Insider trading as source of private benefits/compensation? (Manne 1996, Hue and Noe 2001, Roulstone 2003, Henderson 2011, Denis and Xu 2013, Cziraki et al. 2014)
   - ➢ First to use short-swing rule to capture trading intentions
   - ➢ Are profits large?

3. Can monitoring restrain insider trading?
   - ➢ Depends on how do trade quantities and profits respond

Preview of findings

Using $ profits vs. % returns offers contrasting evidence on a number of important questions

- Typical dollar profits are small
- Informed trading proxies predict returns, but not profits
  - Proxies are negatively correlated with quantities
  - Frequency is first-order determinant of profits
- Sole exception: new proxy of trading intentions based on trading around the short-swing rule threshold
  - Still, even profits of these insiders remain modest
- Different insiders respond differently to increase in monitoring

Insider trading universe

- Insider trading data from Thomson Reuters spanning 1986 to 2013

Transactions	644,643
Buys	148,363
Sells	496,280
Insider-years	263,413
Firm-years	52,602
Unique insiders	92,758
Unique firms	7,643

- Aggregate trades by insider-day

Calculating dollar profits – main measure

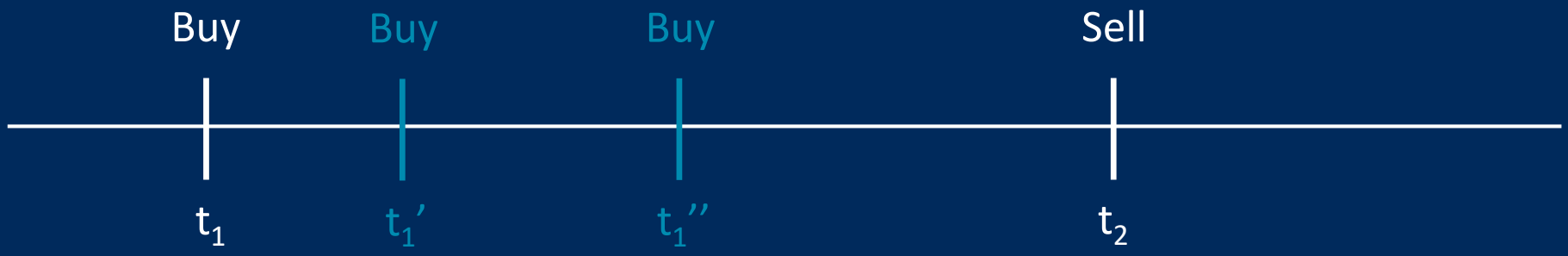
Dollar profit(t_1,t_2) = return(t_1,t_2) × value traded

- Subtract benchmark, e.g. FF3, to obtain abnormal profit

Abnormal dollar profit(t_1,t_2) = abnormal return(t_1,t_2) × value traded

- Use window of (0,20): common in literature
- *Potential* profit, insider does not necessarily pocket this
- Sample selection: (1) if potential profit is negative, wait for price to adjust, (2) some insiders do not close trades at all

Calculating dollar profits – alternative measure



Dollar profit(t_1,t_2) = return(t_1,t_2) × value traded

- Return(t_1,t_2) = (p_2 – p_1) / p_1

Properties

✓ *Actual* profit, insider does pocket this

✗ How to calculate p_1 if sale is preceded by multiple purchases?

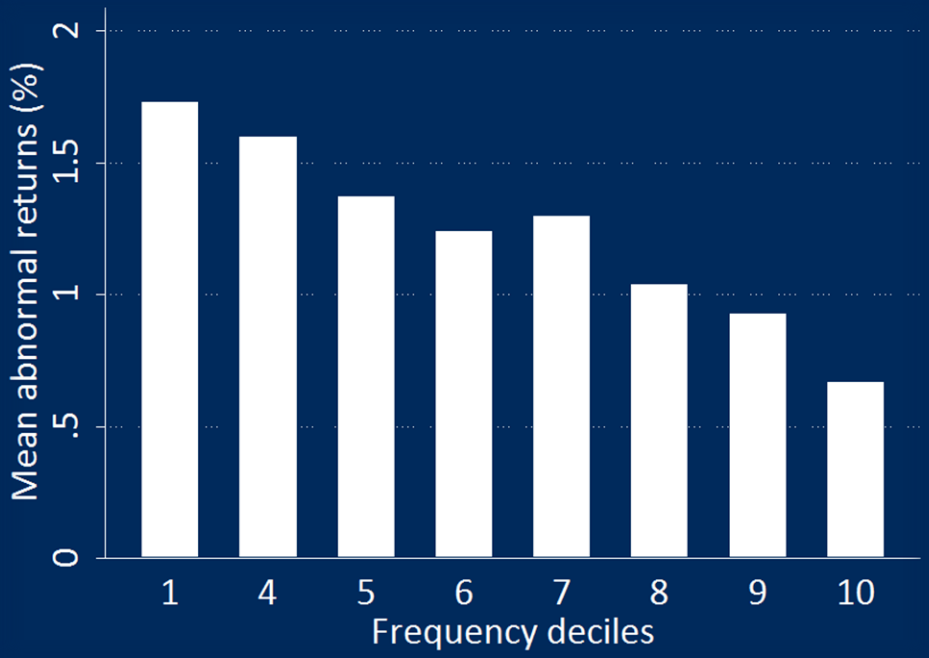
✗ Can insiders profit from price declines?

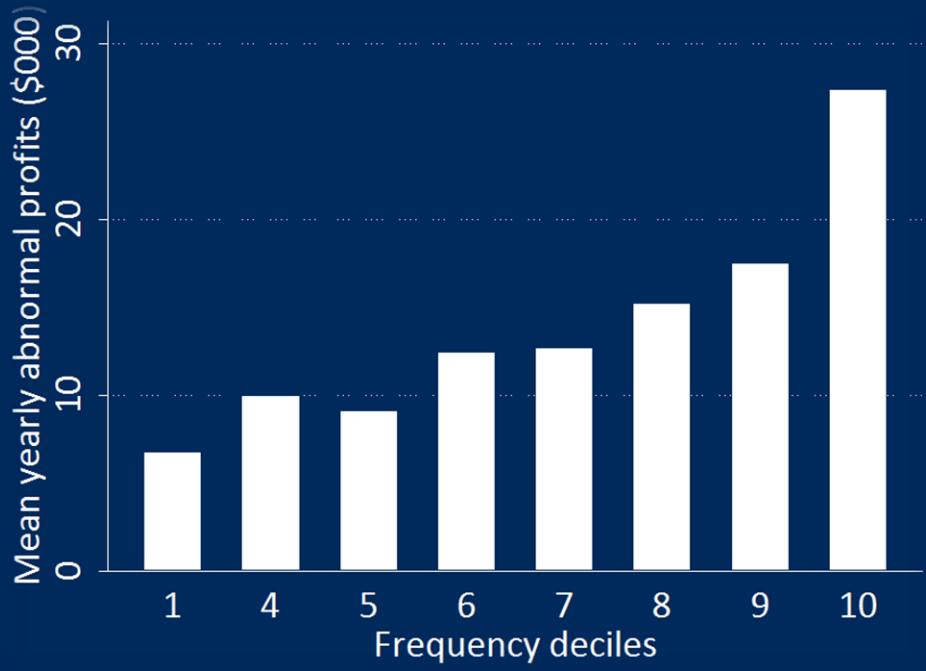
Summary statistics

Variable	Mean	Sd	p10	p50	p90
Yr frequency	2.8	5.4	1	1	5
Yr value traded	1,845	8,984	14	232	3,483
Abnormal return (%)	0.9	10.8	-10.9	0.6	12.9
Abnormal profit	4.2	85	-31	0.141	41
Yr abnormal profit	12	182	-46	0.464	76
Yr abnormal round-trip profit	125	981	-106	5	354
Profits/compensation (%)	1.1	11.1	-4.1	0.1	6.7
Firm-year level abnormal profit	61	621	-189	3.349	397
Insider-lifetime abnormal profi	35	413	-72	1.095	157
Insider-lifetime frequency	7	14.7	1	3	15

Infrequent traders: high returns, but low profits

Returns and yearly profits by frequency deciles





Known predictors of percentage returns

- **Buy:** purchases more likely to be information-driven, sales may be motivated by diversification or liquidity (e.g. Jeng, Metrick, and Zeckhauser 2003)
- **Opportunistic:** trades deviating from routine trading patterns are more informative (Cohen, Malloy, and Pomorski 2012)
- **CFO:** CFO trades more informative (Wang, Shin, and Francis 2015)
- **Executive:** Trades by insiders closer to decision-making are more informative (e.g., Ravina and Sapienza 2010)

Returns vs. profits: informed trading proxies

	Abnormal return	Trade frequency	Trade value	Abnormal profit	Yr abnormal profit	Yr abnormal round-trip profits
	(1)	(2)	(3)	(4)	(5)	(6)
Buy only (d)	0.920***	-0.479***	-83.712***	0.405	-3.402***	68.041
	(0.10)	(0.05)	(15.05)	(0.58)	(1.01)	(44.59)
Opportunistic (d)	0.507***	-5.657***	26.220	2.083***	-2.396	-74.232
	(0.10)	(0.32)	(47.37)	(0.74)	(3.80)	(86.68)
Infrequent (d)	0.333***	-4.322***	-286.435***	-1.135**	-21.834***	-246.999***
	(0.06)	(0.10)	(23.73)	(0.48)	(1.88)	(29.69)
CFO (d)	0.353***	-0.698***	-163.598***	0.220	-3.813***	-73.347***
	(0.08)	(0.04)	(18.75)	(0.49)	(1.15)	(19.19)
Executive (d)	0.197***	-0.770***	-54.086***	0.644	-2.588***	22.985
	(0.05)	(0.04)	(18.79)	(0.41)	(0.99)	(16.88)

Each cell contains results from a separate regression, with controls and FE

Returns of infrequent traders 37% higher, but profits more than 100% lower.

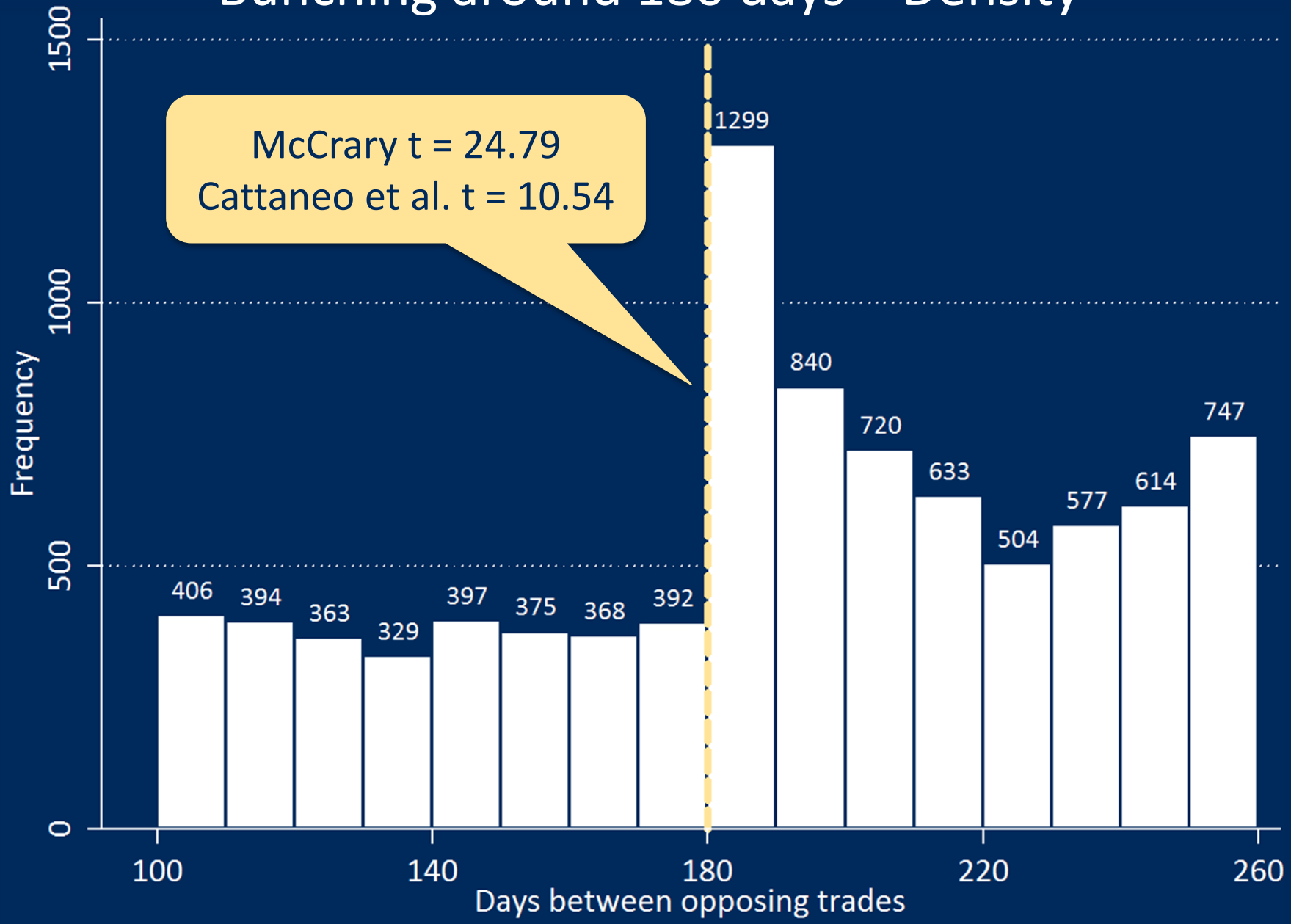
Revealed preferences using the short-swing rule

- **Short-swing rule:** Round-trip profits within less than 6 months have to be returned to issuer
  - Section 16(b) of the Securities Exchange Act of 1934

- Exploit potential discontinuity to infer trading motives
  - **Bunching** around points that feature discontinuities to elicit behavioral responses (Bach and Metzger 2018, Goncharov, Ioannidou and Schmalz 2018)
  - Manipulability: assignment variable is discrete choice – opposite of RD

- Study insider behavior around the 6-month threshold
  - Null: If insiders did not care about keeping profits, distribution around 180 days between opposite trades should be continuous
  - Close trade just after expiration → likely driven by profit-seeking

Bunching around 180 days – Density



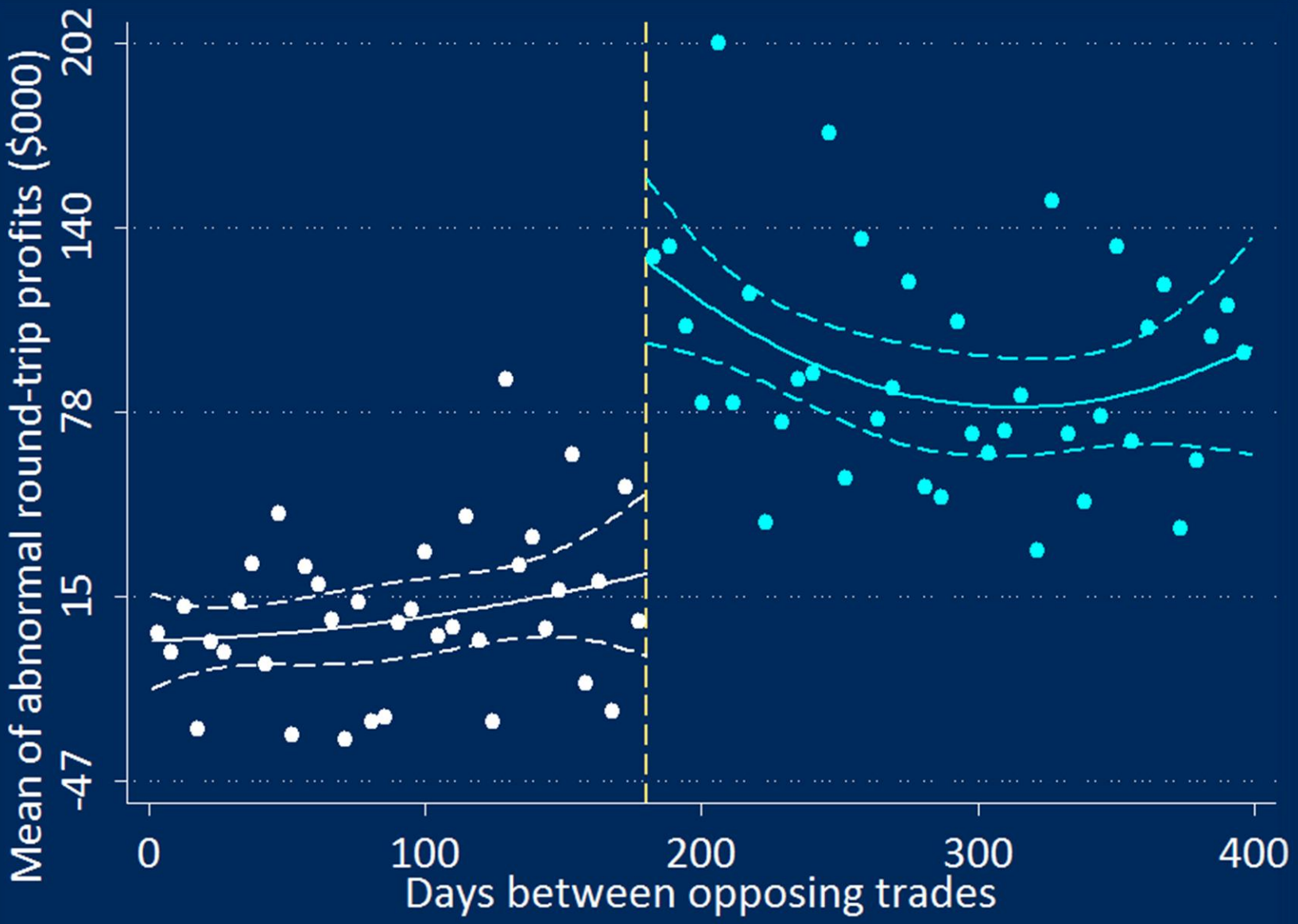
Bunching around 180 days – Tests

	McCrary (2008)			Cattaneo et al. (2017)
Cutoff (days)	**Log density**	**s.e.**	**t**	**t**
		Short-swing rule		
180	1.042	0.042	24.789	10.537
181	1.029	0.042	24.470	12.139
182	1.011	0.042	24.179	12.479
		Placebo cutoffs		
30	-0.650	0.033	-19.442	-2.999
60	-0.337	0.039	-8.638	-1.920
90	0.106	0.050	2.136	1.678
100	-0.120	0.053	-2.238	-0.641
365	-0.004	0.042	-0.097	-0.411
730	0.070	0.061	1.147	0.437

Bunching around 180 days – Subsamples

Subsample	Before	After	Factor	χ2	p-value
Firm size					
Small firms	84	186	2.2	6.33	0.01
Large firms	72	255	3.5		
Market-to-book value					
Low M/B	74	265	3.6	3.69	0.03
High M/B	93	236	2.5		
Insider wealth					
Low wealth	13	31	2.4	3.10	0.05
High wealth	4	28	7.0		
Insider type					
Other insiders	181	451	2.5	8.89	0.00
Executives	219	772	3.5		
Analyst forecast error					
Low error	9	15	1.7	3.50	0.04
High error	5	27	5.4		
Analyst forecast dispersion					
Low dispersion	8	7	0.9	7.97	0.00
High dispersion	5	29	5.8		

Discontinuity around 180 days – Profits



Mechanical relation?

- Stark differences between trades closed 181-200 days and other trades

- Is this all mechanical?
  - Suppose insider happens to get lucky
  - This is why she closes the trade just after expiration

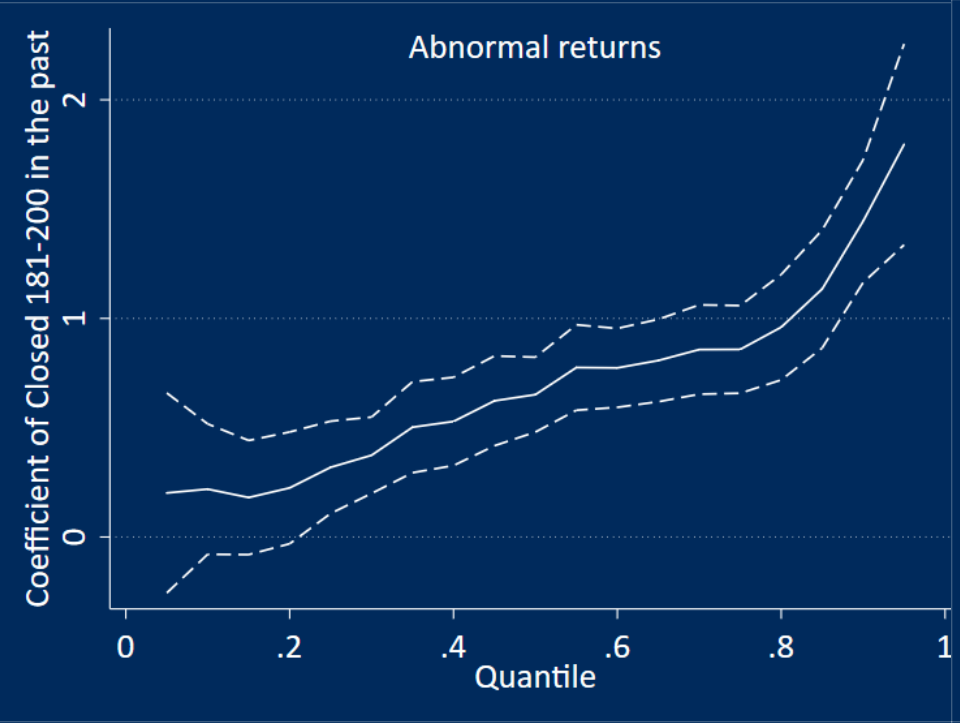
- Disentangling intentions from a mechanical relation:
  - Does short-swing trading predict **future** behavior?
  - Inconsistent with mechanical interpretation

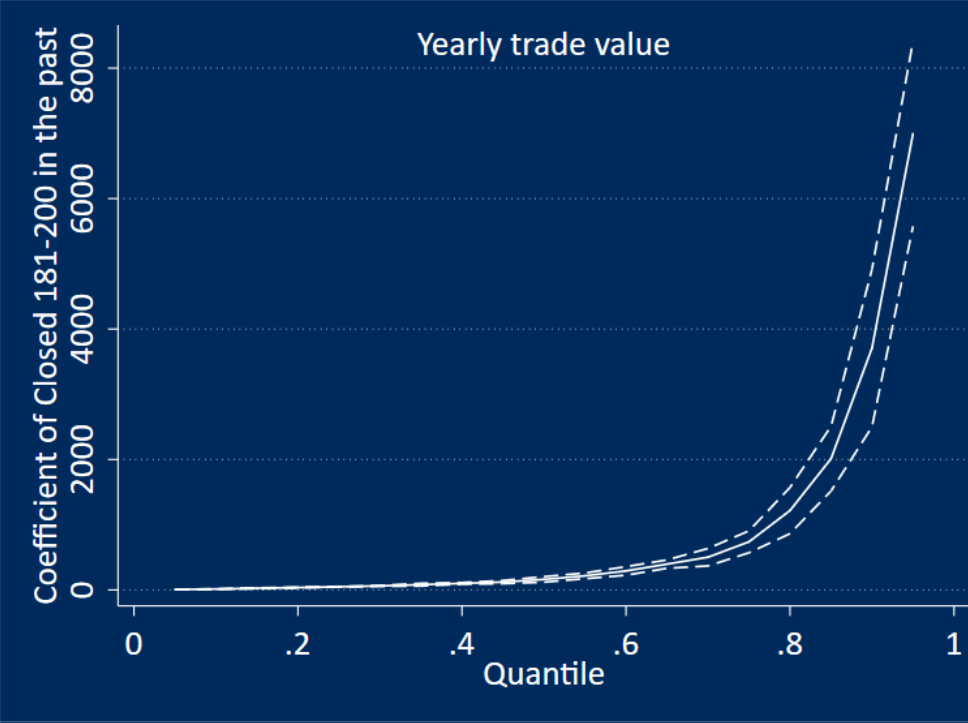
"Short-swing closers" make higher future profits

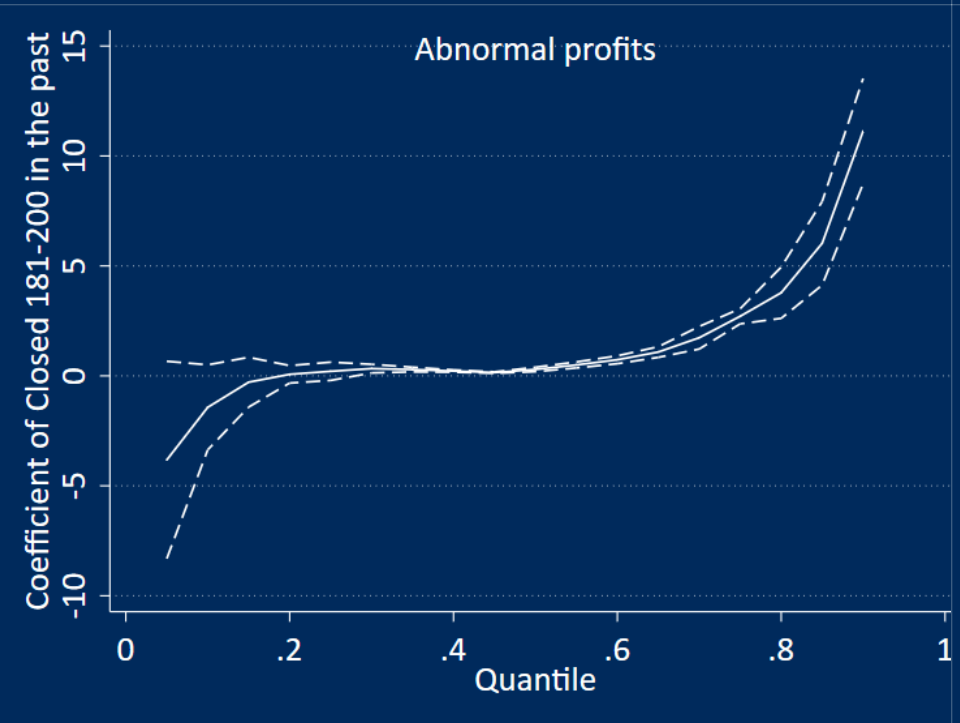
T6A: All observations	Abnormal return	Trade frequency	Trade value	Abnormal profit	Yr abnormal profit	Yr abnormal round-trip profit
	(1)	(2)	(3)	(4)	(5)	(6)
Closed 181-200 in the past	0.372*	1.966***	130.477***	3.932**	22.442***	120.908**
	(0.20)	(0.24)	(43.75)	(1.66)	(5.59)	(48.41)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	643,558	262,218	643,558	643,558	262,218	30,002

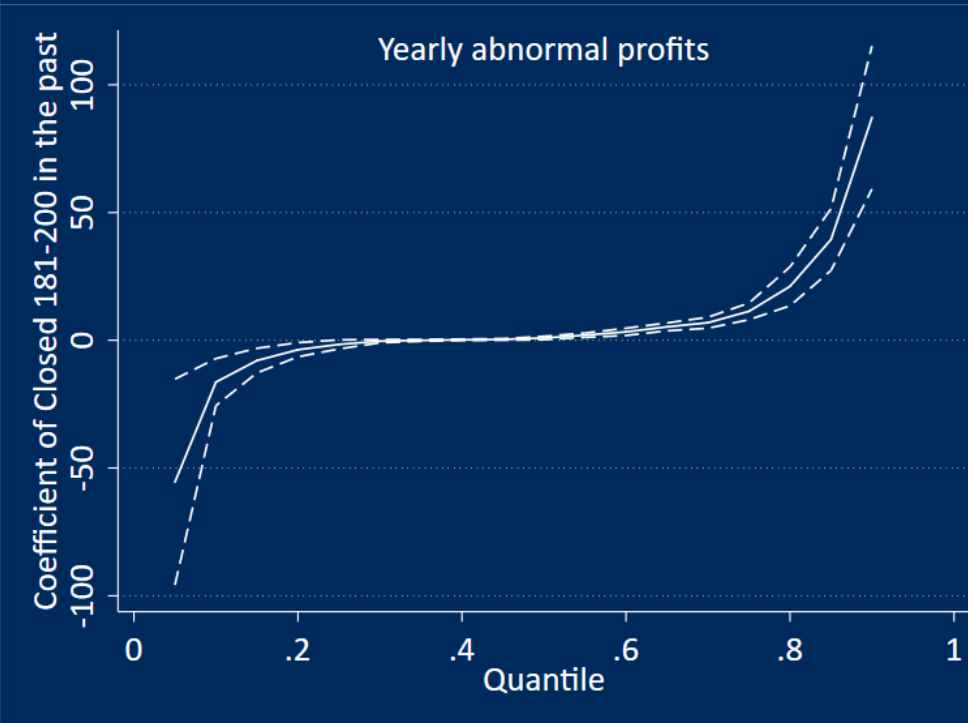
T6C: Only round-trips	Abnormal return	Trade frequency	Trade value	Abnormal profit	Yr abnormal profit	Yr abnormal round-trip profit
	(1)	(2)	(3)	(4)	(5)	(6)
Closed 181-200 in the past	0.297	3.039***	164.634***	2.443	33.035*	305.330**
	(0.41)	(0.65)	(55.65)	(2.74)	(17.06)	(136.91)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	58,174	23,526	58,174	58,174	23,526	7,781

Short-swing trading predicts higher future returns and profits


Abnormal returns
Coefficient of Closed 181-200 in the past
-1
0
1
2
0
.2
.4
.6
.8
1
Quantile

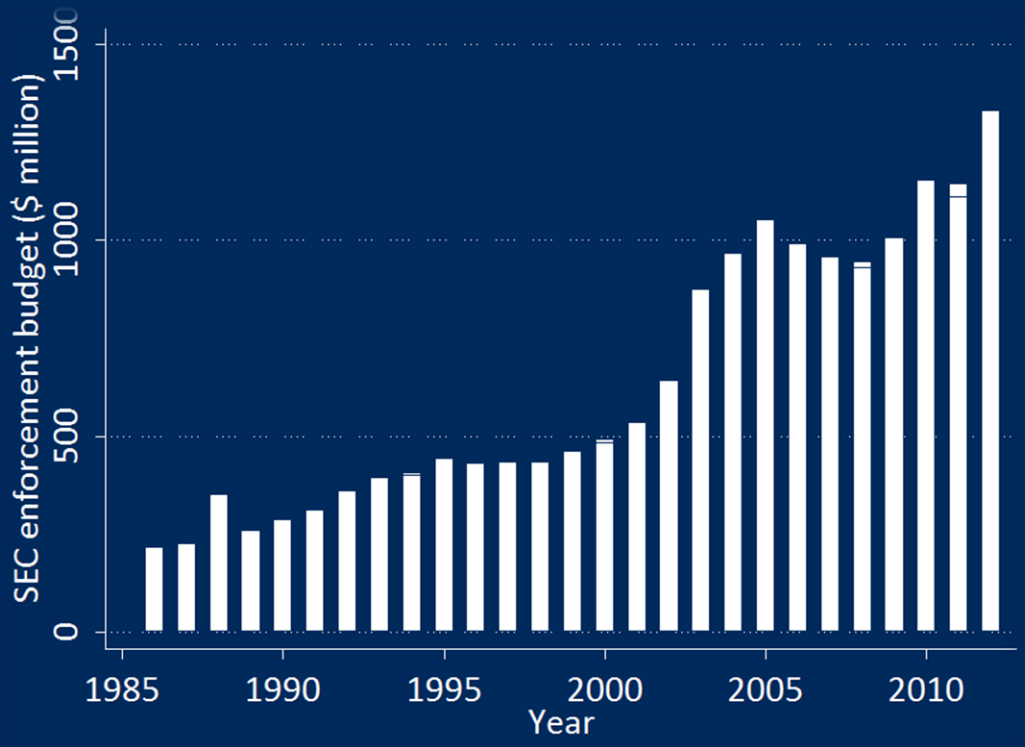

Yearly trade value
Coefficient of Closed 181-200 in the past
0
2000
4000
6000
8000
0
.2
.4
.6
.8
1
Quantile


Abnormal profits
Coefficient of Closed 181-200 in the past
-10
-5
0
5
10
15
0
.2
.4
.6
.8
1
Quantile


Yearly abnormal profits
Coefficient of Closed 181-200 in the past
-100
-50
0
50
100
0
.2
.4
.6
.8
1
Quantile

SEC enforcement budget as monitoring proxy

How do abnormal returns and profits respond to variation in monitoring intensity?



- Resource-based measure of enforcement (Del Guercio, Odders-White, and Ready 2017)
- Determined through political process, not by amount of insider trading
- Produces variation in attention by regulator/monitoring

SEC enforcement budget

	Abnormal return	Trade frequency	Trade value	Abnormal profit	Yr abnormal profit	Yr abnormal round-trip profit
	(1)	(2)	(3)	(4)	(5)	(6)
SEC budget	-0.430**	-0.180*	-191.795***	-5.599***	-2.339	25.120
	(0.21)	(0.10)	(50.64)	(1.83)	(3.80)	(47.71)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes

Returns, volume, and per-trade profits decrease with monitoring, but yearly profits do not

SEC budget: frequent vs. infrequent traders

	Abnormal return	Trade frequency	Trade value	Yearly trade value	Abnormal profit	Yr abnormal profit
	(1)	(2)	(3)	(4)	(5)	(6)
Infrequent	0.47***	-2.98***	-35.34	-924.27***	2.92**	-0.42
	(0.16)	(0.18)	(38.41)	(255.99)	(1.26)	(4.22)
SEC budget × infrequent	-0.49**	-0.43***	-310.67***	-1337.94***	-7.42***	-7.41**
	(0.21)	(0.09)	(52.23)	(179.22)	(1.69)	(3.48)
SEC budget × frequent	-0.29	1.32***	-3.70	2910.58***	-2.33	20.78***
	(0.25)	(0.23)	(65.15)	(364.08)	(2.40)	(7.11)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Difference (frequent - infrequent)	0.2	1.75***	306.97***	4248.52***	5.09***	28.19***
F-value	(1.22)	(60.45)	(32.40)	(114.54)	(9.99)	(24.36)

When SEC enforcement intensity is high:

- Infrequent traders trade less, their trades are less profitable
- Frequent traders trade (even) more, realize higher profits

Summary

$ profits and % returns offer contrasting evidence on insider trading!

- Typical insider trading profits are small
- Informed trading proxies predict returns, but not profits
  - Proxies are negatively correlated with quantities
  - Frequency is first-order determinant of profits
- Our novel proxy of trading intentions predicts profits
  - Even insiders identified by this measure make modest profits
- Different insiders respond differently to monitoring