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Slow trading and stock return predictability

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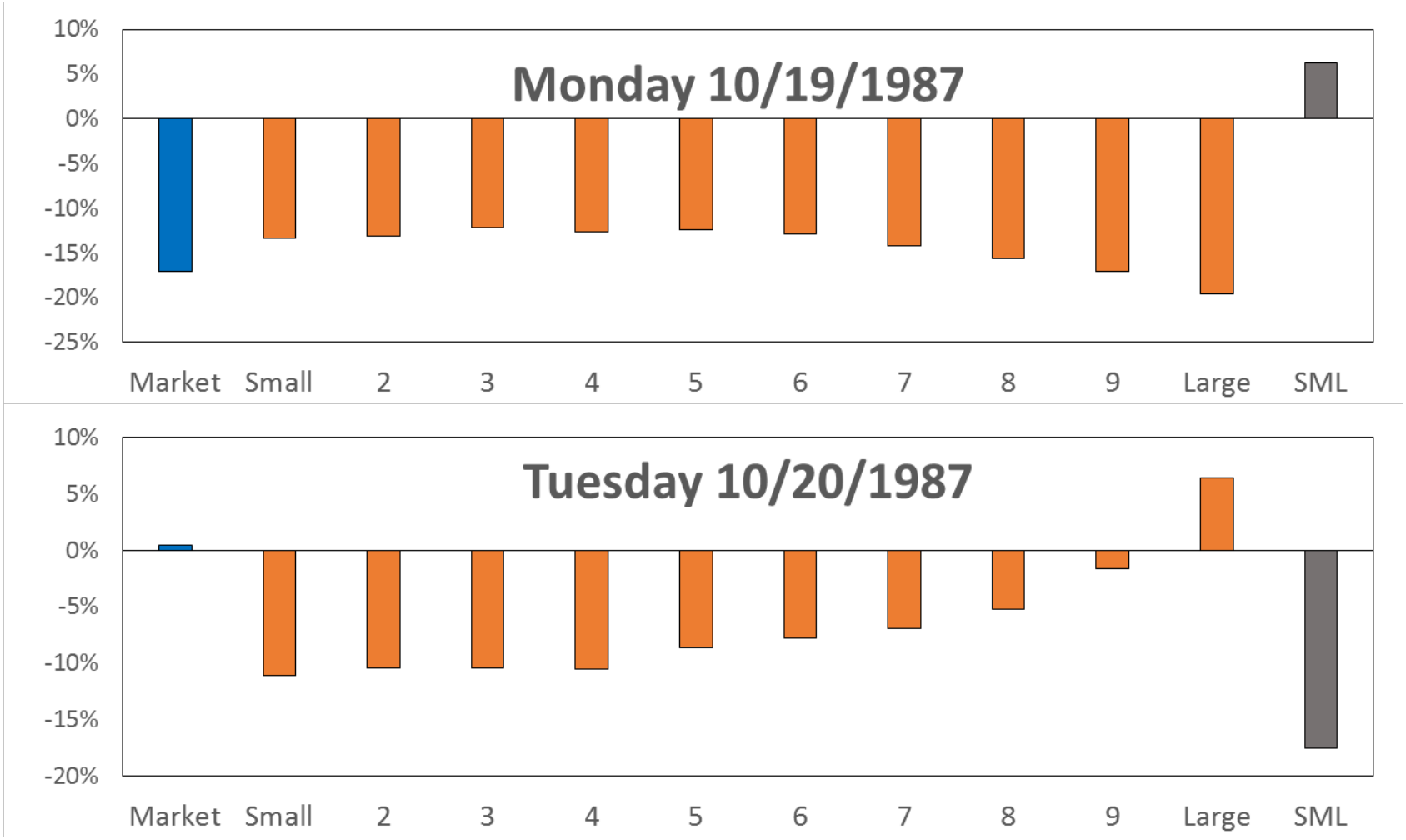
Black Monday: Returns on size deciles

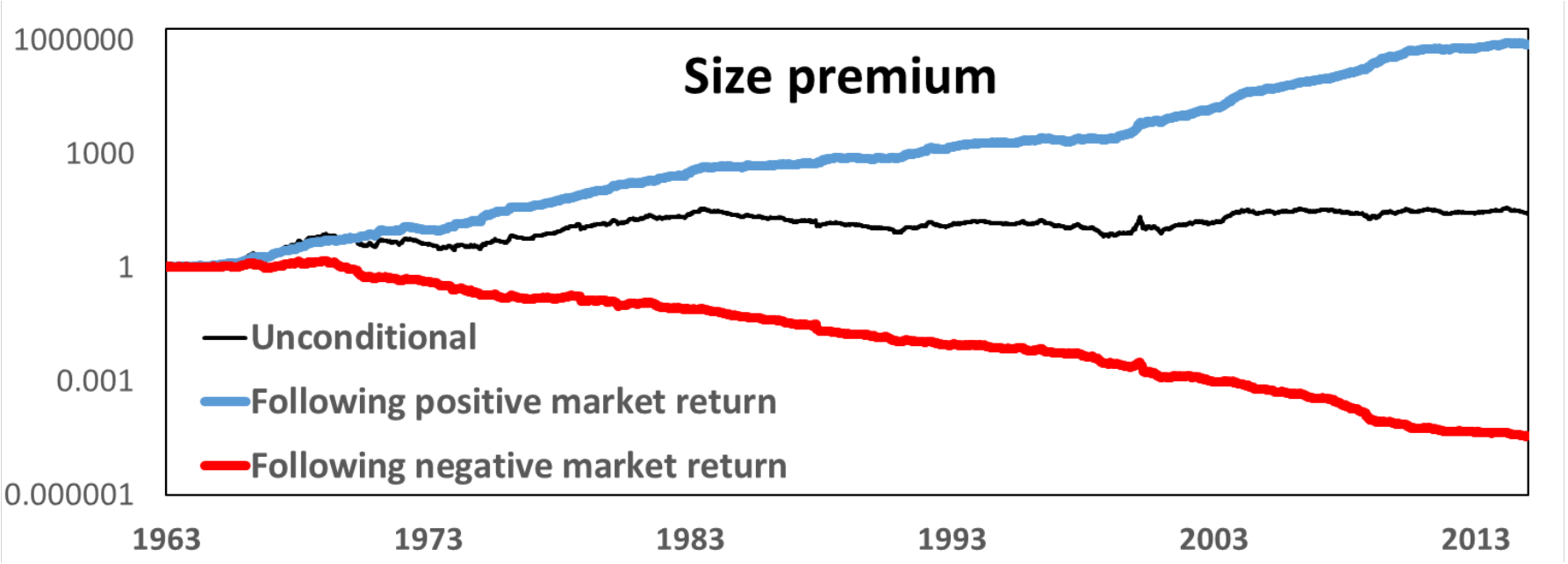


- Large-cap reversal
- Small-cap continuation

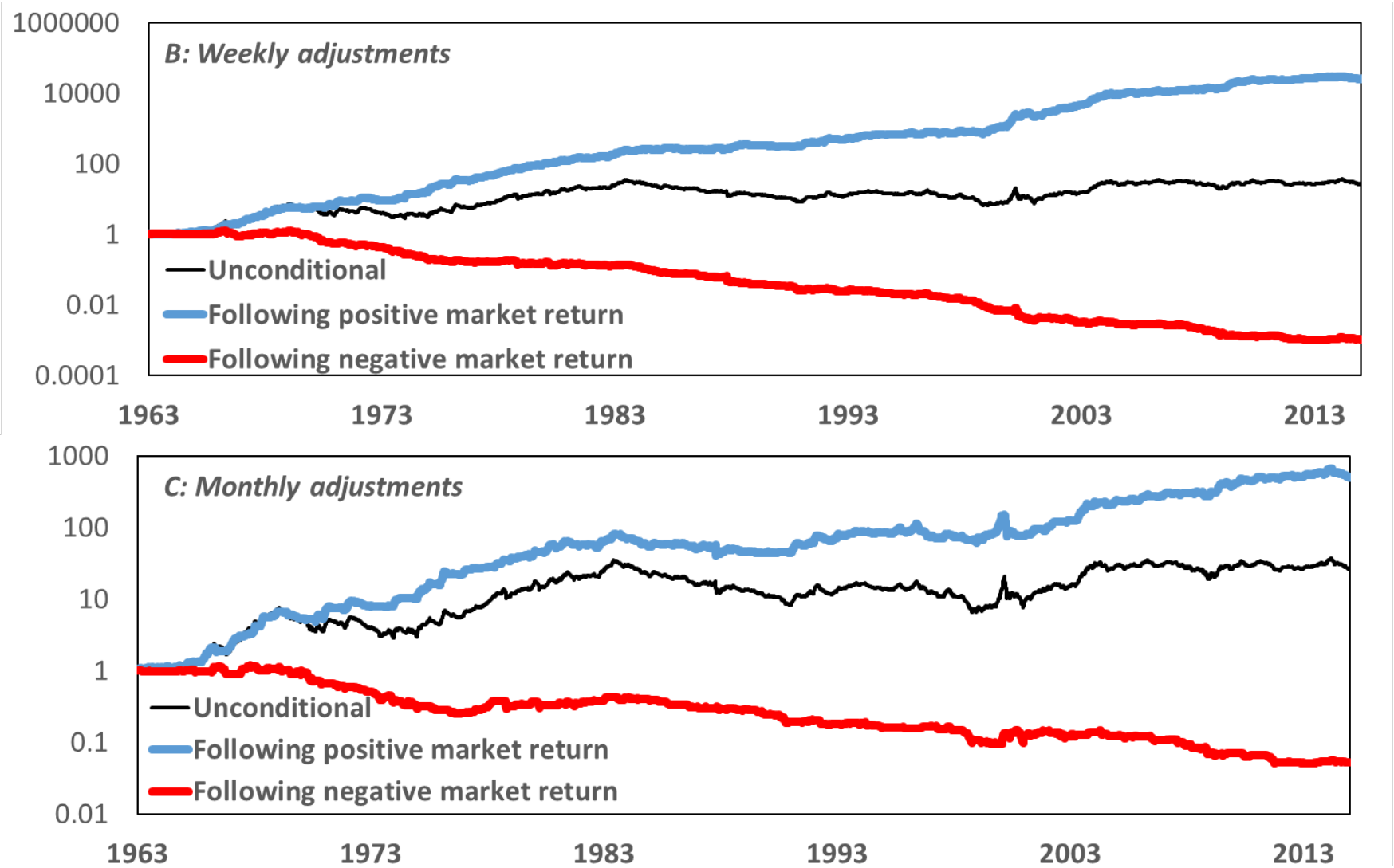
Size Premium following good/bad market days

- Size premium ($R_{SML,t} = R_{S,t} - R_{L,t}$): Smallest decile-Largest decile (End-of-June Market Cap, NYSE breakpoints, *active stocks*)

- Daily size premium conditional on positive/negative lagged market returns ($R_{VW,t-1}$)



Size premium following good and bad weeks /months



Monthly size premium: $E(R_{SML,t} | R_{vw,t-1}>0)$=1.1%, $E(R_{SML,t} | R_{vw,t-1}<0)$=-0.5%

Our key findings

- **Size premium is predictable by lagged market returns**
  - Trading strategy: High alpha at daily, weekly and monthly rebalancing frequencies (also executable with ETFs)
  - Two sources of predictability: Slow adjustment of small stocks AND reversal of large stocks

- Predictability is **due to investors trading large stocks swiftly** (return reversal) and **small stocks slowly** (delayed adjustment)
  - ANcerno data: Lead-lag relation between trading volume of large and small stocks; splitting of small stock trades across multiple days
  - Mutual fund scandal in September 2003: Funds experiencing outflows sell first large stocks, small stocks only later

Relation to literature

- Lead-lag in large/small stock returns: Lo and MacKinlay (1990), Chordia and Swaminathan (2000)
- Slow adjustment of small stocks due to gradual diffusion of information: Badrinath, Kale and Noe (1995), Hou and Moskowitz (2005), Hou (2007), Chordia, Sarkar and Subrahmanyam (2011)

Complementary channel: Slow trading

- Capital moving slowly to small stocks: Trading frictions as opposed to gradual diffusion of information
- **Liquidity**: Slow trading to reduce trading costs. Vayanos (1999, 2001), Garleanu and Pedersen (2013), Rostek and Weretka (2015)
- **Limited attention**: Peng and Xiong (2006), Corwin and Coughenour (2008); focus first on large stocks where most value at risk

Agenda

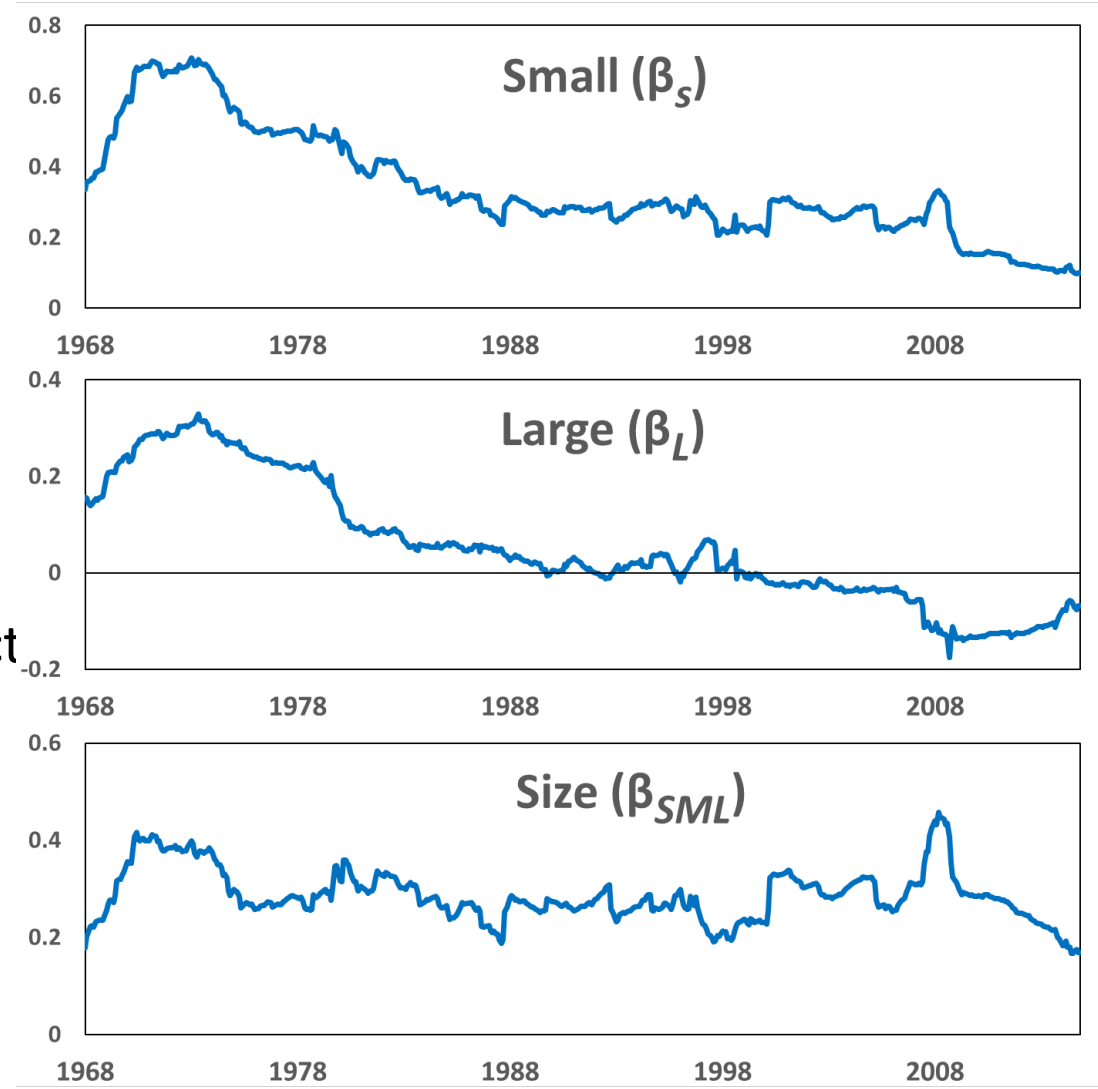
- Introduction
- Predictability of the size premium
- Slow trading
  - Market level
  - Institution level
- Conclusion

Predictability over time

- 5-year rolling regressions (daily data):

- Size premium more predictable than small-cap returns, due to negative effect of mkt returns on large-cap

- Robustness: Size premium within subsets of stocks (double sorts), multiple lags, replace smallest decile by 2nd decile



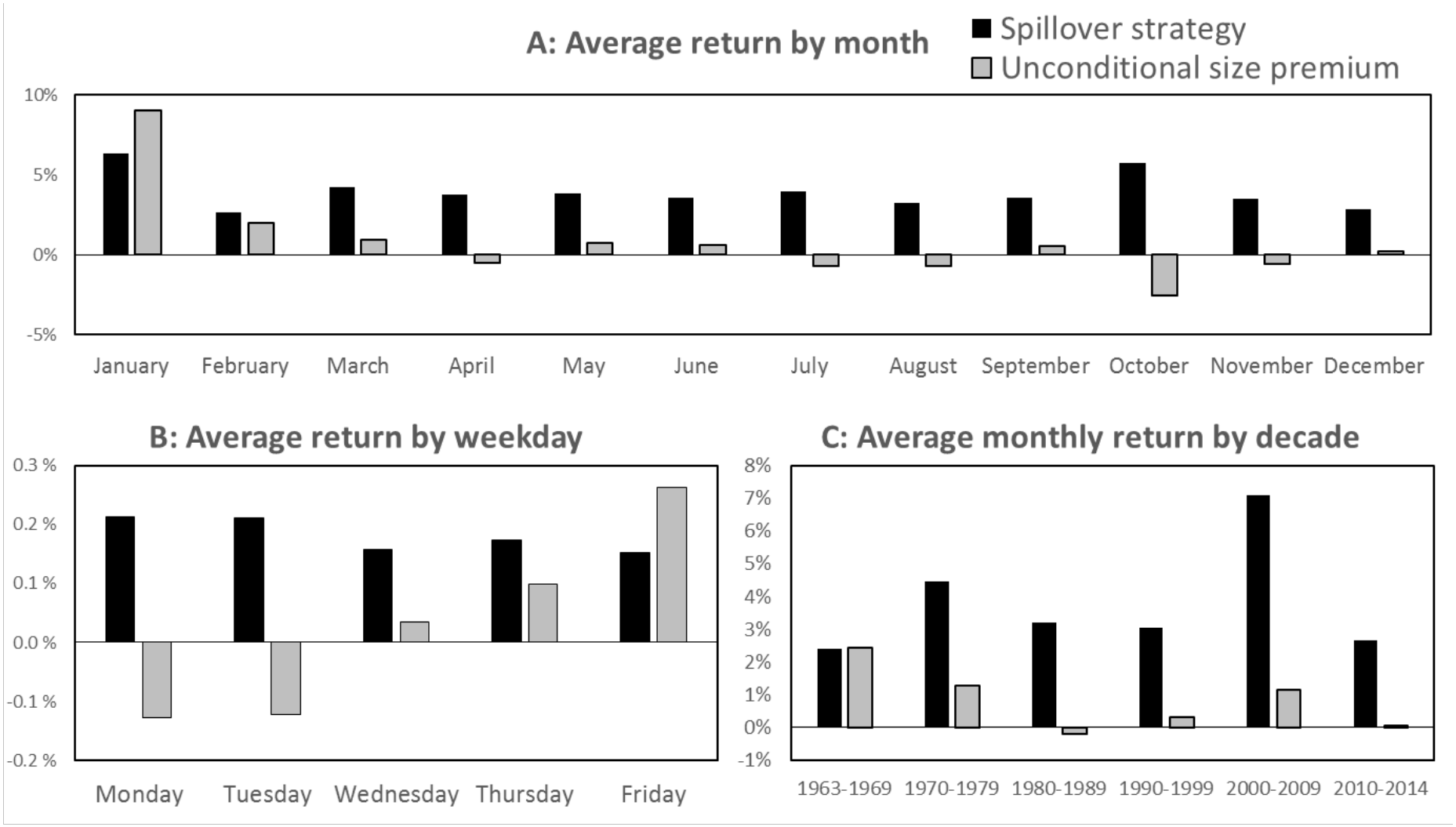
Spillover strategy

- Long in small stocks and short in large stocks following ***positive*** market returns
- Long in large stocks and short in small stocks following ***negative*** market returns

	Spillover strategy		
	Daily	*Weekly*	*Monthly*
Monthly Return	3.8 %	2.8 %	1.4 %
Sharpe Ratio	0.74	0.59	0.25
α *4-Factor*	4.3 % ***	3.0 % ***	1.8 % ***
	12.25	*10.84*	*6.62*
Adjustments/year	113.6	25.9	6.5

- Monthly spillover strategy using small-cap and large-cap ETFs (2002-2014): $\alpha_{4\text{-}Factor} = 0.45\%$ (t-stat: 2.32)

Trends and seasonality in the spillover strategy



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Delays in trading within institutions

- ANcerno database: Transactions by a large sample of US institutional investors (2001-2010)

- Define three variables (institution-date observations)

$TURN_f$: Volume by institution *f* as % of market capitalization

$TURN_{fS}$: Volume by institution *f* in *small stocks* as % of mkt cap

$TURN_{fL}$: Volume by institution *f* in *large stocks* as % of mkt cap

- Regress small stock turnover and large stock turnover on contemporaneous and lagged aggregate turnover

Delays in trading within institutions

	$TURN_{f,S,t}$ Small	$TURN_{f,L,t}$ Large
$TURN_{f,t}$	0.43 ***	0.73 ***
	15.18	*22.37*
$TURN_{f,t-1}$	0.04 ***	0.00
	4.87	*0.51*
$TURN_{f,t-2}$	0.03 ***	-0.01
	4.46	*-1.32*
$TURN_{f,t-3}$	0.02 **	-0.01
	2.19	*-1.38*
$TURN_{f,t-4}$	0.02 **	0.00
	2.04	*0.33*
$TURN_{f,t-5}$	0.03 ***	0.00
	4.88	*-0.08*
Observations	303792	303792
Adj. R^2	0.41	0.70
Institution fixed effects	yes	yes
Date fixed effects	yes	yes

Mutual Fund Scandal: A natural experiment

- 25 fund families accused of illegal trading: Experience outflows from September 2003 (Kisin, 2011; Anton and Polk, 2014)
- Diff-in-Diff: Holdings by scandal and non-scandal funds before and after September 2003

A: One quarter Diff-in-Diff (2003Q2-2003Q3)

	Holdings in #shares (log)	
	Large stocks	Small stocks
After (2003Q3)	0.02 *	0.10 ***
	1.70	*4.28*
Scandal*After	-0.08 **	0.03
	-2.29	*0.45*
Observations	328	328
Fund fixed effects	yes	yes

B: Four quarter Diff-in-Diff (2003Q2-2004Q2)

	Holdings in #shares (log)	
	Large stocks	Small stocks
After (2004Q2)	0.22 ***	0.36 ***
	7.30	*8.28*
Scandal*After	-0.25 ***	-0.15 **
	-3.64	*-2.20*
Observations	312	312
Fund fixed effects	yes	yes

Scandal funds reduced large-cap holdings in first quarter of scandal

Small-cap holdings reduced later

Conclusion

- Size premium predictable by lagged market return
  - Attractive trading strategies
  - Small-cap continuation and large-cap reversal
  - Predictability larger during illiquid times

- Institutional slow trading:
  - On high-volume days, institutions focus on large firms and delay trading of small firms
  - Mutual funds affected by a scandal in 2003 reduced holdings of large stocks before small stocks