Interim
Trading Skills
of
Institutional
Investors

Puckett and
Yan

Interim Trading Skills of Institutional Investors

Puckett and Yan

March 14, 2019

Introduction

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Overview

- Examines interim (intra-quarter) trading skills of institutional investors using ANcerno data
- Find strong evidence that investors earn significant abnormal returns on trades within trading quarter
- Interim trading is persistent
- Trading skills documented by previous studies are biased downward since they cannot account for interim trades

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Related Literature

- Stocks that mutual funds purchase earn higher returns than the stocks they sell
  - Chen, Jegadeesh and Wermers (2000), Kacperczyk, Sialm, and Zheng (2005), and more
- Trading performance has since declined or reversed in recent times
  - Duan, Hu, McLean (2009)
- Conflicting results whether institutional traders can predict future stock returns
  - Bennett, Sias, and Starks (2003), Cai and Zheng (2004)

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Claim: Previous studies have used quarterly trading data as a proxy which cannot adequately capture intraquarter data, limiting this proxy:

1. Quarterly data cannot capture buys and sells of the same stock in between quarters
2. Quarterly holdings cannot identify exact timing and execution of trades

Previous studies assume all trades occur at the end of the quarter, but they can occur at any time. This can limit the researcher in properly assessing superior trading skills

Data

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Solution:

Use ANcerno!

- Identifies exact date and execution price of each transaction for each stock.
- Gives number of stocks traded
- Commissions
- Buy or Sell
- Distinguishes trades made by different institutions

Limitation

There is no information on management fees or fund returns

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- Sample period 1999 - 2005
- 840 different institutions in sample period
- 3,816 different funds within those institutions
- Trading activity in sample accounts for 8% of dollar value of trading volume in CRSP
- Of the 3,816 funds:
    - 227 Money Managers
    - 3,589 pension funds

Data

	1999	2000	2001	2002	2003	2004	2005
			Panel A: ANcerno Data				
Total number of funds	1,846	1,699	1,733	1,717	1,600	1,545	1,241
Total number of institutions	382	376	404	430	405	406	376
Median number of funds per inst.	4	4	4	4	4	3	3
Total number of stocks	6,150	5,906	5,082	4,692	4,736	4,927	4,763
Total number of trades (millions)	5.64	7.56	9.05	12.32	12.35	21.43	19.10
Total share volume (billion)	50.69	73.44	100.99	135.04	112.30	155.92	127.40
Total dollar volume ($trillion)	2.25	3.20	3.06	3.23	2.76	4.46	3.95
Average share volume per trade	8,988	9,714	11,159	10,961	9,093	7,276	6,669
Median share volume per trade	1,700	1,500	1,400	1,300	1,050	700	453
Average dollar volume per trade	398,803	423,726	337,633	262,359	223,126	208,027	206,902
Median dollar volume per trade	60,030	54,970	39,200	30,300	27,297	20,568	14,232

Data

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Panel B: Stock Characteristics					
	Mean	Median	*SD*	Maximum	Minimum
Market capitalization ($billion)	2.67	2.76	0.34	3.28	2.03
Book-to-market ratio	0.51	0.49	0.06	0.63	0.43
Lagged 12-month return (%)	4.31	2.38	19.11	57.78	−24.83
Turnover (%)	163.42	158.39	15.84	195.98	143.13
Idiosyncratic volatility (%)	47.93	49.71	11.28	65.30	31.09
Amihud illiquidity measure ($\times 10^4$)	0.22	0.15	0.14	0.58	0.09
Quoted spread (%)	0.06	0.04	0.04	0.14	0.02

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Data

- Additionally, complement data with:
  - CRSP
  - Compustat
  - TAQ

Database Integrity

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No Survivorship Bias

1. ANcerno says so
2. Not all sample firms are present by the end of the sample
3. Authors collected data year by year

Database Integrity

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No Selection Bias

1 ANcerno clients may be different than the average institution
   - no names of institutions given
   - ANcerno provided authors with some names
   - Compare changes in quarterly holdings between ANcerno and 13F

2 Authors find that characteristics of stock holdings of ANcerno does not differ from average 13F

3 ANcerno may not represent random selection of firm holdings and trades
   - Nature of ANcerno should not give this incentive of firms to misreport
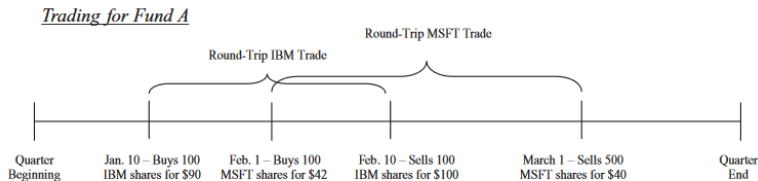
Methodology

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Intraquarter Round-trip trades

1. Select all trades in a quarter where firm buys and sells particular stock
2. Calculate Holding Period return
3. Subtract DGTW return to get abnormal return
4. Compute average principal-weighted raw and abnormal return, with and without commissions, of all round-trip trades for each fund during each quarter

Methodology

Trading for Fund A

Round-Trip IBM Trade

Round-Trip MSFT Trade

| Quarter Beginning | Jan. 10 – Buys 100 IBM shares for $90 | Feb. 1 – Buys 100 MSFT shares for $42 | Feb. 10 – Sells 100 IBM shares for $100 | March 1 – Sells 500 MSFT shares for $40 | Quarter End |

Example

- IBM holding period return is $11.1\% = (($100 - $90)/$90)$
- MSFT is $-4.76\% = (($40 - $42)/$42)$
- Take principle-weighted raw average where:
    - IBM has $.6818 = ($9000/$13200)$ and MSFT $0.3182 = ($4200/$13200)$
    - Total return then is 6.06%

Methodology

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All Trades

1 For each fund separate all trades within the quarter into buys and sells
2 Track performance of each trade until the end of the quarter
3 Subtract DGTW Benchmark return over same period
4 Compute equal and principle weighted abnormal return for buys and sells separately
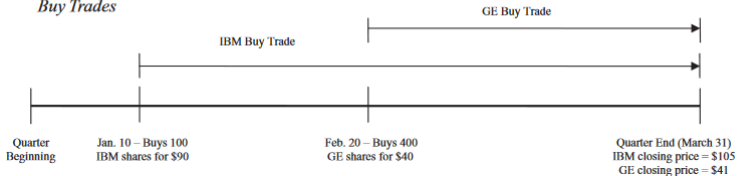5 Calculate difference in return before and after commission

Methodology

Trading for Fund B

Buy Trades

GE Buy Trade

IBM Buy Trade

| Quarter Beginning | Jan. 10 – Buys 100 IBM shares for $90 | Feb. 20 – Buys 400 GE shares for $40 | Quarter End (March 31) IBM closing price = $105 GE closing price = $41 |

Sell Trades

AAPL Sell Trade

IBM Sell Trade

| Quarter Beginning | Feb. 10 – Sells 100 IBM shares for $100 | Mar. 1 – Sells 100 AAPL shares for $120 | Quarter End (March 31) IBM closing price = $105 AAPL closing price = $115 |
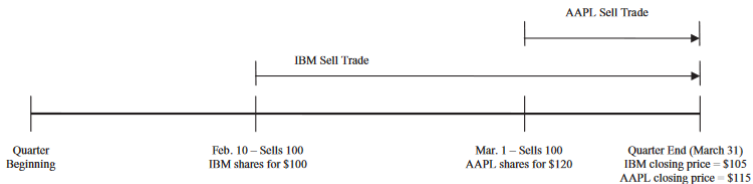
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Example

- Buy trades have holding period return of 16.67% and 2.5% for IBM and GE
- Sell trades have 5.0% and −4.17% for IBM and AAPL
- Assume DGTW is 0, and we have EW return of:
  $(9.59\% − 0.42\%) = 9.17\%$

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Hypothesis

If funds possess trading skill, their abnormal round-trip trading performance will be positive

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Table 2

Panel A: Performance of Round-Trip Trades			
	All	Pension Funds	Money Manager Funds
Raw return	2.99	3.07	2.00
	(4.79)	(4.70)	(4.23)
Raw return (after commissions)	2.71	2.79	1.69
	(4.30)	(4.24)	(3.64)
DGTW adj. return	2.09	2.17	1.17
	(3.81)	(3.84)	(2.28)
DGTW adj. return (after commissions)	1.80	1.88	0.87
	(3.27)	(3.32)	(1.71)
% of intra-quarter round-trip trades	22.89	18.30	33.65

Empirical Results – Round Trip Trades Persistence

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Table 2

Panel B: Performance Persistence of Round-Trip Trades					
Current Quarter DGTW adj. Return Quintiles	Quarters				
	Q+0	Q+1	Q+2	Q+3	Q+4
q1	−13.16	−2.67	−2.54	−2.05	−1.82
	(−20.11)	(−4.79)	(−3.63)	(−2.75)	(−2.00)
q2	−2.98	−0.20	−0.23	−0.32	−0.21
	(−8.77)	(−0.38)	(−0.46)	(−0.50)	(−0.34)
q3	0.94	1.28	1.40	1.29	1.32
	(2.31)	(2.43)	(2.36)	(2.48)	(2.19)
q4	5.48	3.74	3.51	2.96	3.02
	(9.00)	(5.02)	(4.33)	(3.89)	(4.66)
q5	20.15	6.85	6.89	6.10	6.09
	(12.60)	(7.91)	(8.13)	(9.24)	(6.47)
q5–q1	33.31	9.53	9.43	8.15	7.91
	(17.08)	(11.37)	(11.99)	(10.23)	(7.10)

Concerns

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- Mechanical Factors from rebalancing
- Behavioral Bias - selling winners to quickly, holding losers too long

Solution

Look at all trades measured from earlier

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Hypothesis

If funds have trading skills, then the stocks a fund buys will
outperform the stocks it sells

- Some trades might be due to fund flows and rebalancing
- Will bias against study of finding evidence of trading skill

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Table 3

	All	Pension Funds	Money Manager Funds
Panel A: Equal-Weighted DGTW Adjusted Return			
Buy	0.67	0.68	0.50
	(4.04)	(3.96)	(4.38)
Sell	−0.06	−0.06	−0.13
	(−0.43)	(−0.40)	(−1.06)
Buy−Sell	0.74	0.74	0.63
	(7.73)	(7.51)	(6.28)
Buy−Sell (after commissions)	0.34	0.34	0.27
	(3.26)	(3.16)	(2.87)

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Table 3

	Panel B: Principal-Weighted DGTW Adjusted Return		
Buy	0.54	0.55	0.45
	(3.57)	(3.48)	(4.22)
Sell	−0.03	−0.01	−0.26
	(−0.18)	(−0.08)	(−1.73)
Buy−Sell	0.57	0.56	0.72
	(5.73)	(5.52)	(4.75)
Buy−Sell (after commissions)	0.27	0.26	0.40
	(2.67)	(2.52)	(2.74)

Table 4

Current Quarter Performance Quintiles		Quarters				
		Q+0	Q+1	Q+2	Q+3	Q+4
q1	Buy	−3.88	0.15	0.13	0.21	0.11
		(−14.12)	(0.95)	(0.63)	(1.23)	(0.57)
	Sell	4.79	0.48	0.38	0.44	0.27
		(10.70)	(2.38)	(1.81)	(2.48)	(1.26)
	Buy−Sell	−8.67	−0.33	−0.24	−0.23	−0.16
		(−15.11)	(−1.49)	(−1.38)	(−1.14)	(−0.66)
q2	Buy	−0.78	0.36	0.29	0.21	0.30
		(−8.16)	(3.73)	(2.73)	(1.36)	(2.35)
	Sell	1.05	0.05	−0.08	−0.01	0.11
		(6.98)	(0.33)	(−0.61)	(−0.07)	(0.64)
	Buy−Sell	−1.84	0.31	0.37	0.22	0.18
		(−11.59)	(2.50)	(3.01)	(1.75)	(1.12)
q3	Buy	0.37	0.36	0.50	0.46	0.36
		(3.60)	(2.63)	(4.04)	(2.54)	(3.93)
	Sell	−0.25	−0.14	−0.15	0.02	−0.16
		(−2.45)	(−1.11)	(−1.08)	(0.10)	(−1.06)
	Buy−Sell	0.62	0.50	0.65	0.44	0.52
		(10.06)	(5.04)	(4.97)	(3.76)	(3.69)
q4	Buy	1.72	0.59	0.54	0.64	0.59
		(12.58)	(3.44)	(3.38)	(3.82)	(3.73)
	Sell	−1.41	−0.15	−0.17	−0.30	−0.36
		(−14.18)	(−0.70)	(−0.86)	(−1.40)	(−2.64)
	Buy−Sell	3.13	0.74	0.70	0.93	0.96
		(20.29)	(5.18)	(4.82)	(6.42)	(7.41)
q5	Buy	5.29	1.13	0.96	1.13	0.63
		(10.35)	(3.55)	(3.45)	(3.44)	(2.56)
	Sell	−4.31	−0.44	−0.20	−0.20	−0.46
		(−15.80)	(−2.18)	(−0.95)	(−0.88)	(−2.61)
	Buy−Sell	9.60	1.56	1.16	1.33	1.10
		(16.19)	(5.69)	(5.73)	(6.40)	(6.12)

Table 4

q5–q1	Buy	9.17	0.97	0.82	0.91	0.52
		(15.21)	(3.74)	(4.18)	(2.87)	(2.49)
	Sell	−9.11	−0.92	−0.58	−0.64	−0.74
		(−16.02)	(−4.86)	(−3.19)	(−3.53)	(−3.39)
	Buy−Sell	18.27	1.89	1.41	1.56	1.26
		(16.26)	(5.16)	(5.55)	(5.47)	(5.19)

Implied Quarterly Trades

Results support hypothesis that institutions possess significant interim trading skill

Question

What if we ignore round-trip trades and timing of interim trades within the quarter?

Implied Quarterly Trades - Method

1. For each fund and each stock, aggregate all trades in quarter
2. Calculate cumulative net trading position as of the quarter-end
3. Calculate DGTW equal and principle weighted returns for buys and sells, get abnormal returns
4. Compute difference between abnormal returns buys and sells

Implicitly assumes all trades occur at the closing price on the last day of the quarter

Implied Quarterly Trades - Results

Panel A: Implied Quarterly Trading Performance			
	All	Pension Funds	Money Manager Funds
Equal-weighted DGTW adj. Return			
Buy	−0.05	−0.06	0.20
	(−0.14)	(−0.17)	(0.70)
Sell	0.28	0.28	0.27
	(0.79)	(0.79)	(0.73)
Buy−Sell	−0.33	−0.34	−0.08
	(−2.14)	(−2.20)	(−0.38)
Principal-weighted DGTW adj. Return			
Buy	−0.05	−0.05	−0.10
	(−0.17)	(−0.15)	(−0.84)
Sell	0.19	0.20	0.10
	(0.78)	(0.81)	(0.74)
Buy−Sell	−0.24	−0.24	−0.20
	(−1.70)	(−1.66)	(−1.21)

Panel B: Persistence of Implied Quarterly Trading Performance					
Performance	Quarters				
Quintiles	Q+0	Q+1	Q+2	Q+3	Q+4
q1 (low)					
Buy	−7.23	−0.03	0.04	0.01	−0.03
	(−10.74)	(−0.07)	(0.07)	(0.02)	(−0.08)
Sell	7.02	0.45	0.21	−0.01	0.42
	(11.76)	(1.17)	(0.53)	(−0.04)	(0.99)
Buy−Sell	*−14.24*	*−0.48*	*−0.18*	*0.03*	*−0.46*
	(−15.37)	(−1.71)	(−0.61)	(0.07)	(−1.19)

Implied Quarterly Trades - Persistence

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Table V—*Continued*

Panel B: Persistence of Implied Quarterly Trading Performance

Performance Quintiles	Quarters				
	Q+0	Q+1	Q+2	Q+3	Q+4
q2					
Buy	−2.25	−0.17	−0.40	0.04	0.16
	(−7.75)	(−0.50)	(−1.00)	(0.10)	(0.42)
Sell	1.94	−0.04	0.02	0.35	0.15
	(7.56)	(−0.11)	(0.09)	(1.02)	(0.48)
Buy−Sell	−4.19	−0.13	−0.43	−0.03	0.01
	(−15.72)	(−0.66)	(−1.63)	(−1.33)	(0.03)
q3					
Buy	−0.08	−0.07	0.11	0.11	−0.09
	(−0.32)	(−0.23)	(0.47)	(0.35)	(−0.28)
Sell	0.12	0.19	0.31	0.19	0.25
	(0.52)	(0.84)	(1.22)	(0.82)	(0.79)
Buy−Sell	−0.20	−0.25	−0.20	−0.08	−0.34
	(−1.90)	(−1.48)	(−0.99)	(−0.35)	(−1.72)
q4					
Buy	1.97	−0.03	0.05	0.07	0.11
	(6.45)	(−0.13)	(0.20)	(0.22)	(0.33)
Sell	−1.90	0.11	0.33	0.23	0.29
	(−7.05)	(0.54)	(1.60)	(0.81)	(1.18)
Buy−Sell	3.87	−0.14	−0.28	−0.16	−0.17
	(12.94)	(−0.81)	(−1.18)	(−0.69)	(−0.74)
q5 (high)					
Buy	7.33	0.04	0.37	0.04	0.16
	(10.79)	(0.11)	(0.88)	(0.13)	(0.35)
Sell	−6.21	0.03	0.19	0.43	−0.13
	(−13.06)	(0.08)	(0.47)	(1.38)	(−0.37)
Buy−Sell	13.54	0.01	0.18	−0.38	0.29
	(15.77)	(0.04)	(0.47)	(−1.49)	(0.95)

q5–q1					
Buy	14.56	0.07	0.33	0.03	0.20
	(14.24)	(0.17)	(0.57)	(0.08)	(0.51)
Sell	−13.23	−0.42	−0.02	0.44	−0.55
	(−15.96)	(−1.27)	(−0.08)	(1.13)	(−1.37)
Buy−Sell	27.78	0.49	0.36	−0.41	0.75
	(16.07)	(1.05)	(0.68)	(−1.00)	(1.72)

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Profitable Trading is likely to occur in stocks where public info is limited and arbitrage costs are large

- Limited Public Information
    - Firm size and book to market ratio
    - Growth firms
- Limits to arbitrage
    - idiosyncratic volatility
- Both should be correlated with various measures of illiquidity

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Steps:

- Assign decile-rank value to each stock based on NYSE breakpoints
- Highest decile 10, lowest 1
- Turnover, illiquidity, and quoted spread show investors prefer liquid stocks
- However, they appear to also favor high idiosyncratic volatility

Sources of Trading Skill

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Panel A: Stock Characteristics		All	Pension Funds	Money Manager Funds
Size Deciles	Buy	7.98	7.99	7.82
	Sell	8.09	8.10	7.91
Book-to-Market Deciles	Buy	3.60	3.59	3.83
	Sell	3.67	3.65	3.92
Lagged Return Deciles	Buy	5.87	5.89	5.56
	Sell	6.07	6.09	5.72
Turnover Deciles	Buy	7.04	7.05	6.87
	Sell	6.97	6.98	6.83
Idiosyncratic Volatility Deciles	Buy	5.60	5.61	5.39
	Sell	5.43	5.44	5.31
Illiquidity Deciles	Buy	2.80	2.79	2.92
	Sell	2.72	2.71	2.87
Quoted Spread Deciles	Buy	3.46	3.45	3.65
	Sell	3.54	3.53	3.73

Panel B: Abnormal Trading Performance by Stock Characteristics

	Average Decile	Buy	Sell	Buy–Sell
Small stocks	1.88	1.17	0.35	0.82
		(3.45)	(1.23)	(5.07)
Large stocks	7.83	0.35	−0.24	0.59
		(2.02)	(−1.55)	(5.45)
Small–Large				0.23
				(1.22)

(continued)

Sources of Trading Skill

Panel B: Abnormal Trading Performance by Stock Characteristics				
	Average Decile	Buy	Sell	Buy–Sell
Growth stocks	2.75	0.43	−0.15	0.58
		(2.51)	(−0.97)	(5.88)
Value Stocks	8.29	1.34	0.50	0.84
		(3.56)	(1.50)	(5.02)
Growth−Value				−0.26
				(−1.42)
Past losers	2.55	0.35	−0.15	0.50
		(1.68)	(−0.64)	(3.19)
Past winners	8.34	0.61	−0.11	0.71
		(3.55)	(−0.57)	(6.94)
Losers−Winners				−0.21
				(−1.09)
Low turnover stocks	2.38	0.80	0.06	0.74
		(2.56)	(0.19)	(6.93)
High turnover stocks	8.54	0.55	−0.08	0.63
		(2.08)	(−0.35)	(5.01)
Low−High				0.11
				(0.66)
Low IVOL stocks	3.08	0.56	0.11	0.45
		(2.43)	(0.47)	(5.06)
High IVOL stocks	9.03	0.79	−0.09	0.88
		(2.16)	(−0.24)	(5.58)
Low−High				−0.43
				(−2.52)
Low illiquidity stocks	3.16	0.35	−0.15	0.49
		(2.31)	(−1.05)	(4.65)
High illiquidity stocks	9.07	1.82	0.53	1.29
		(4.92)	(1.83)	(4.26)
Low−High				−0.80
				(−2.41)
Low quoted spread stocks	2.62	0.36	−0.21	0.56
		(2.43)	(−1.27)	(5.22)
High quoted spread stocks	8.61	1.59	0.55	1.05
		(5.39)	(2.14)	(6.10)
Low−High				−0.48
				(−2.79)

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Illiquidity?

Question

Does compensation for liquidity provision drive interim trading performance? If so, funds with higher interim trading performance should experience lower or negative implicitly trading costs.

Result

High-skill funds incur higher implicit trading costs - more likely to demand liquidity

Illiquidity

Interim Trading Performance Quintiles	Average Interim Trading Performance (%)	Implicit Trading Costs (%)
Q1 (low)	−8.67	0.051 (5.87)
Q2	−1.84	0.058 (8.21)
Q3	0.62	0.056 (9.32)
Q4	3.13	0.070 (8.71)
Q5 (high)	9.60	0.090 (7.42)
Q5–Q1	18.27	0.039 (3.82)

Robustness

Interim
Trading Skills
of
Institutional
Investors

Puckett and
Yan

- Trading performance and trading horizon does not appear to be correlated
- Using FIFO and LIFO give similar results
- Pre- and Post-bubble (tech) yields similar results
- Some success is determined by institutional-level factors
- Funds with the highest interim trading performance have higher monthly fund alphas

Conclusion

Interim
Trading Skills
of
Institutional
Investors

Puckett and
Yan

- Authors seek to sort out the real story of trading skills of institutional investors
- Use interim (intraquarter) data whereas former studies use discrete quarterly
- Show that institutional investors do have above average skill, and it persists
- Using same data but with discrete quarterly measures nullify results
- Illiquidity appears to be important factor, and indicates asymmetric information with arbitrage

Questions

- How long do winners win? Persistence more than 4 quarters? Where should I put my money in long-run?
- 1999 - 2005 sample too small?