

# Do Smart Investors Outperform Dumb Investors?

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# Can (Some) Individual Investors Beat the Market?

- Past literature suggests that
  - The average individual investor would have been better off investing in an index fund
  - ... but some individual investors appear to beat the market...
  - ... and this superior performance persists
- IQ score an interesting variable that could be related to successful investing



# IQ Data

- Military service mandatory in Finland for all men, typically at age 19 or 20
  - All scores from 1982 through 2001
  - 86,914 individuals (men) who trade at least once
- Comprehensiveness important → no selection
- 120 questions to measure cognitive functioning in three areas:
  - Mathematical ability, verbal ability, and logical reasoning
  - We use the composite ability score (stanine distribution)



# Other data sets

- 1 Finnish Central Securities Depository (FCSD) registry
  - Daily positions and trades of all individuals in Finland, 1995–2002
  - Official records
- 2 Thomson Worldscope and return data
  - Beta, book-to-market, size, and past returns controls
- 3 Microstructure data for studying execution and transaction costs



# Trading Activity and Portfolio Value by IQ Score

IQ score	Average characteristics			Median characteristics		
	Portfolio value	# of trades	Portfolio turnover	Portfolio value	# of trades	Portfolio turnover
1-4	10,543	18.90	0.0695	2,496	4	0.0263
5	13,351	22.73	0.0696	2,622	5	0.0266
6	11,091	25.89	0.0680	2,806	5	0.0263
7	14,299	24.32	0.0683	2,923	6	0.0267
8	18,285	28.10	0.0651	3,277	7	0.0258
Highest	57,031	31.61	0.0652	3,510	7	0.0254

# Performance Measurement Methodology (I)

- 1 Run daily regression to explain the cross section of stock returns
- 2 Control for the standard stock-specific determinants:
  - Beta, size, and book-to-market
  - Past returns:  $[-1, -1]$ ,  $[-5, -2]$ ,  $[-21, -6]$ ,  $[-252, -22]$   
→ Do not reward high/low IQ investors for style
- 3 Control for investor-specific non-IQ characteristics:
  - Trading activity, wealth, and age
- 4 **Main explanatory variables:** IQ stanine dummies 5–9
  - The component of IQ orthogonal to stock characteristics, trading activity, and portfolio value  
→ groups 1 through 4 jointly act as the benchmark

## Performance Measurement Methodology (II)

- Eight regressions each day (four for purchases, four for sales)
- Find investors who buy or sell in four formation periods:
  - Two days ago, past week, past month, past three months
- Each observation a buy or a sell by an investor with known ability score
- How to think about this:
  - 1 Use stock characteristics to explain which stocks go up and which go down each day
  - 2 Ask: if I now add information on how high and low IQ investors traded in all these stocks, say, two days ago, can I improve this prediction?

## Buy-Side Coefficients: IQ Dummies

Independent variables	Formation Period			
	[-2,-2]	[-5,-3]	[-21,-6]	[-63,-22]
<i>IQ score</i>				
5	0.012 (0.80)	-0.010 (-1.06)	-0.001 (-0.13)	-0.003 (-1.06)
6	0.022 (1.57)	0.002 (0.15)	0.002 (0.45)	0.000 (-0.14)
7	0.024 (1.47)	0.011 (0.94)	0.007 (1.43)	0.000 (0.02)
8	0.041* (2.24)	0.018 (1.65)	0.011* (2.03)	0.007 (1.63)
Highest	0.044* (2.34)	0.033** (2.58)	0.016** (2.58)	0.005 (0.97)

# Interpreting the Buy-Side Estimates

- Hypothetical trading strategy:
  - Put all highest IQ investors in one room
  - Put all below-average IQ investors in other room
  - Construct a **self-financing portfolio**:
    - Buy stocks that the highest IQ investors buy
    - Sell stocks that the below-average IQ investors buy
  - Adjust portfolio weights so that the portfolio is immune to price movements related to stock-specific and non-IQ investor characteristics
  
- 1 If you rebalance every other day, you earn extra **11% per year**
- 2 If you rebalance once a month, you earn extra **5.3% per year**
  
- Wealth, trading activity, and age do not enter significantly
- High-minus-low IQ gap widens if control variables omitted

## Sell-Side Coefficients: IQ Dummies

Independent variables	Formation Period			
	[-2,-2]	[-5,-3]	[-21,-6]	[-63,-22]
<i>IQ score</i>				
5	-0.024 (-1.69)	0.005 (0.65)	-0.003 (-0.86)	-0.004 (-1.70)
6	-0.016 (-1.23)	0.004 (0.55)	0.000 (-0.14)	-0.002 (-0.80)
7	-0.015 (-0.96)	0.005 (0.63)	0.003 (0.81)	0.000 (0.04)
8	-0.006 (-0.36)	0.009 (1.01)	0.005 (1.13)	0.003 (0.85)
Highest	0.011 (0.63)	0.009 (0.88)	0.011* (2.32)	0.003 (0.76)

# Conclusions about Stock-Picking Abilities

- High IQ investors buy stocks that appreciate in the near future
- No difference between low- and average-IQ investors
- Gap economically and statistically highly significant
- No differences on the sell side
  - Short-sale restrictions/high costs?
- Very short-lived IQ effect
  - Nothing there if we go beyond three months
  - Two reasonable possibilities:
    - 1 Private information
    - 2 Trades carry information
  - Results not driven by extreme stock price movements

What about transaction costs?

# Same-Day and Next-Day Returns: Buy Side

	$r_t$	$r_{t+1}$		$r_t$	$r_{t+1}$
<i>IQ score</i>			<i>Trading activity quintile</i>		
5	0.068** (3.25)	0.015 (1.00)	Lowest	0.038 (1.60)	-0.004 (-0.26)
6	0.084*** (3.82)	0.012 (0.84)	2	-0.001 (-0.03)	0.009 (0.52)
7	0.092*** (3.33)	-0.006 (-0.36)	3	-0.020 (-0.53)	0.029 (1.56)
8	0.106*** (4.31)	0.038* (2.01)	4	0.122*** (4.35)	0.049* (2.46)
Highest	0.150*** (5.36)	0.045* (2.19)	Highest	0.182*** (6.60)	0.090*** (4.23)

# Intraday Returns on Market Orders

IQ Score	Return from trade to bid-ask midpoint or to closing price, percent							
	Buys				Sells			
	Bid-ask midpoint at				Bid-ask midpoint at			
	-0	+1	+5	Close	-0	+1	+5	Close
5	0.010 (1.40)	-0.002 (-0.14)	-0.007 (-0.44)	0.003 (0.12)	0.000 (-0.04)	0.002 (0.15)	0.018 (1.19)	0.028 (0.86)
6	0.000 (0.01)	0.018 (1.61)	0.023 (1.32)	0.096*** (3.58)	-0.009 (-1.24)	-0.007 (-0.57)	-0.005 (-0.30)	0.010 (0.34)
7	0.014 (1.54)	0.013 (0.92)	-0.002 (-0.14)	0.090** (2.63)	-0.012 (-1.42)	-0.037* (-2.35)	-0.013 (-0.77)	0.027 (0.59)
8	0.010 (1.13)	0.011 (0.75)	0.017 (0.72)	0.118*** (3.46)	-0.021 (-1.86)	-0.023 (-1.29)	-0.012 (-0.57)	0.007 (0.17)
9	0.021* (2.25)	0.034* (1.98)	0.029 (1.25)	0.139*** (3.82)	-0.037* (-2.50)	-0.036* (-2.50)	-0.042* (-2.09)	-0.040 (-0.96)

# Intraday Returns on Executed Limit Orders

IQ Score	Return from trade to bid-ask midpoint or to closing price, percent							
	Buys				Sells			
	Bid-ask midpoint at				Bid-ask midpoint at			
	-0	+1	+5	Close	-0	+1	+5	Close
5	-0.014 (-1.34)	-0.010 (-0.45)	-0.029 (-1.33)	0.021 (0.58)	-0.003 (-0.35)	-0.005 (-0.32)	-0.002 (-0.12)	0.024 (0.73)
6	-0.002 (-0.23)	-0.011 (-0.56)	-0.046 (-1.70)	0.073* (1.96)	0.006 (0.67)	-0.040 (-1.33)	-0.028 (-1.66)	-0.029 (-0.82)
7	0.002 (0.20)	0.019 (0.68)	0.015 (0.62)	0.010 (0.27)	-0.012 (-1.36)	-0.002 (-0.09)	-0.020 (-1.04)	-0.016 (-0.37)
8	-0.008 (-0.71)	0.011 (0.46)	0.016 (0.65)	0.084* (2.24)	-0.005 (-0.52)	-0.008 (-0.41)	-0.011 (-0.45)	-0.062 (-1.19)
9	-0.003 (-0.24)	0.047* (2.05)	0.035 (1.66)	0.112* (2.42)	0.005 (0.48)	-0.040* (-2.41)	-0.055** (-2.74)	-0.096* (-2.24)

# Conclusions about Transaction Costs

- 1 Transaction costs do not offset the post-trade gap
  - Short-term returns widen the gap
- 2 Market orders:
  - Low IQ investors cannot identify transitory price effects
  - More likely to demand liquidity at inopportune times, relative to all investors above above-average intelligence
- 3 Limit orders:
  - Adverse selection problem not as severe for the highest IQ investors

# Conclusions

- Great data for studying IQ and stock market outcomes
  - No self-reported outcome variables
  - Comprehensive, exogenous, and selection-free IQ data
- 1 High IQ investors' purchases outperform low IQ investors' purchases
  - No sell-side difference: short-sales constraints?
  - Return on collective intelligence: 5–11% per year
- 2 IQ's effect very short-lived
  - Private information?
  - Privacy laws kick in → cannot e.g. study executives' trades
- 3 Results hold in various subsamples and for alternative variable definitions