Econ 219B
Psychology and Economics: Applications
(Lecture 8)

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Outline

1. Attention: Financial Markets
2. Menu Effects: Introduction
3. Menu Effects: 1/n Heuristics
4. Menu Effects: Use of Irrelevant Information

1 Attention: Financial Markets

- **Barber and Odean (2004) – Attention to salient**

- Investor with limited attention
  - Stocks in portfolio: Monitor continuously
  - Other stocks: Monitor extreme deviations (*salience*)

- High-attention (salient) stocks:
  - demand increases
  - supply does not
  - increase in net demand

- Heterogeneity:
  - Small investors with limited attention attracted to salient stocks
  - Institutional investors less prone to limited attention

- Market interaction: Small investors are:
  - net buyers of high-attention stocks
  - net sellers of low-attention stocks.

- Measure of net buying is Buy-Sell Imbalance:

$$BSI_t = 100 * \frac{\sum_i NetBuy_{i,t} - \sum_i NetSell_{i,t}}{\sum_i NetBuy_{i,t} + \sum_i NetSell_{i,t}}$$

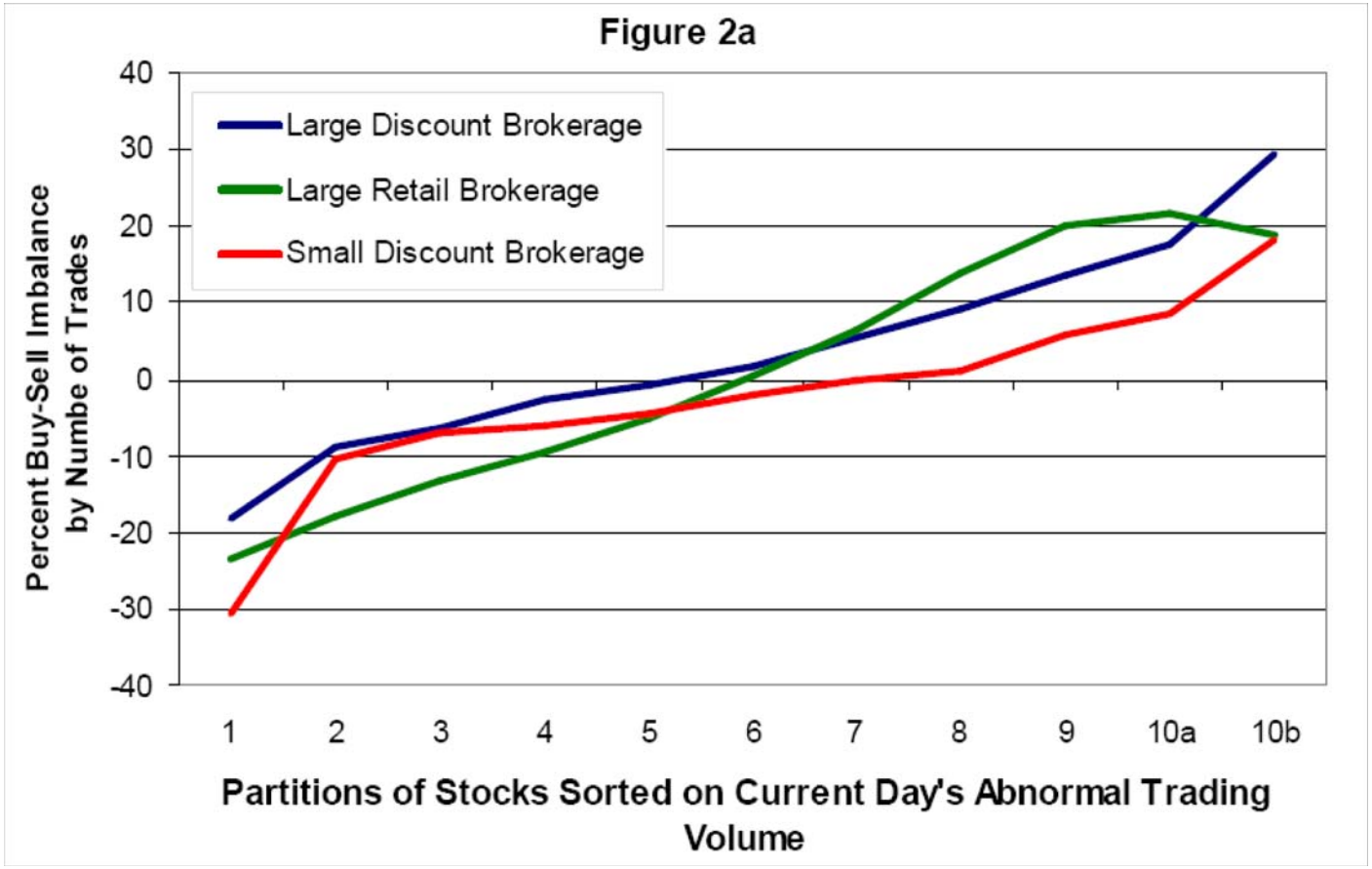
- Notice: Unlike in most financial data sets, here use of individual trading data

- In fact: No obvious prediction on prices

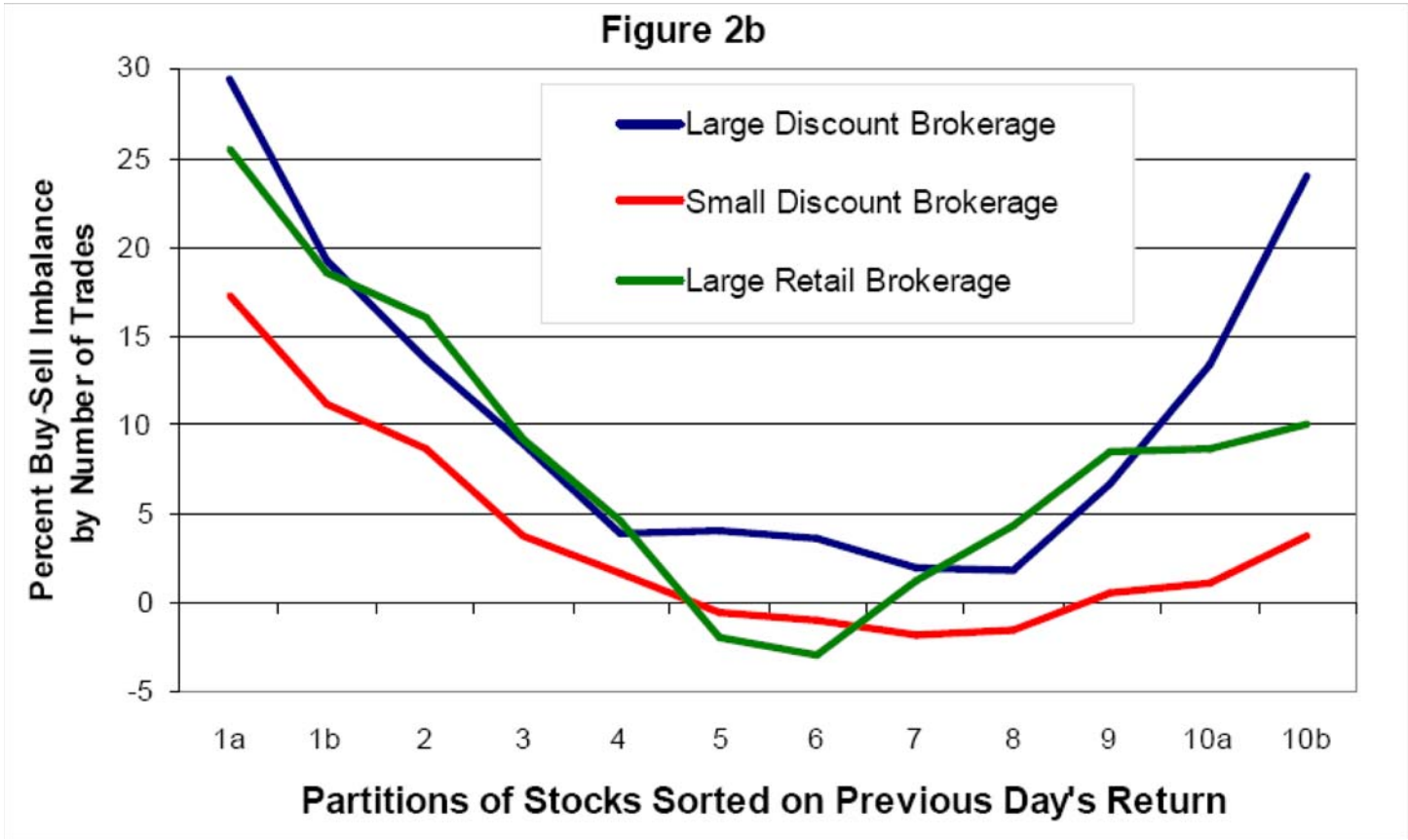
- Measures of attention:
  - same-day (abnormal) volume V_t
  - previous-day return r_{t-1}
  - stock in the news (Using Dow Jones news service)

- Use of sorting methodology
  - Sort variable (V_t, r_{t-1}) and separate into equal-sized bins (in this case, deciles)
    - Example: $V_t^1, V_t^2, V_t^3, ..., V_t^{10a}, V_t^{10b}$
    - (Finer sorting at the top to capture top 5 percent)
  - Classical approach in finance
  - Benefit: Measures variables in a non-parametric way
  - Cost: Loses some information and magnitude of variable

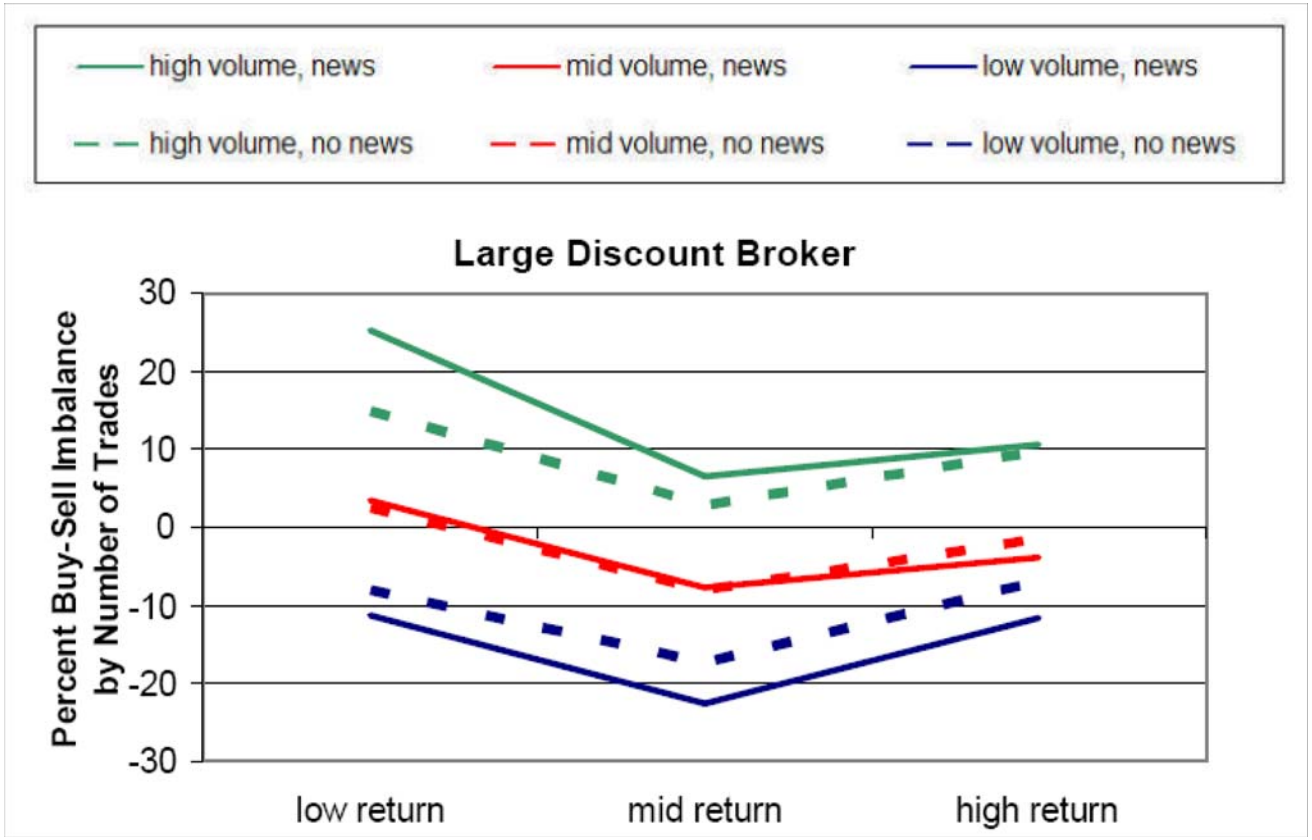
- Effect of same-day (abnormal) volume V_t monotonic (Volume captures 'attention')



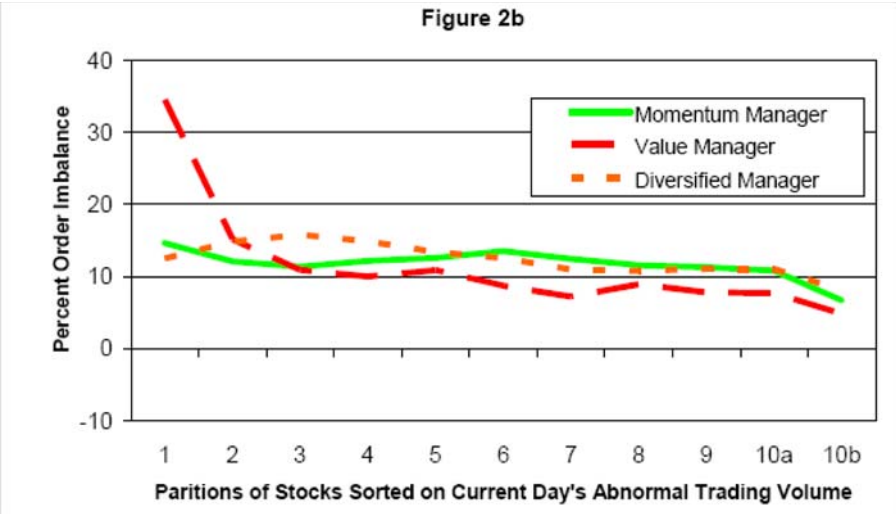
- Effect of previous-day return r_{t-1} U-shaped
  (Large returns—positive or negative—attract attention)

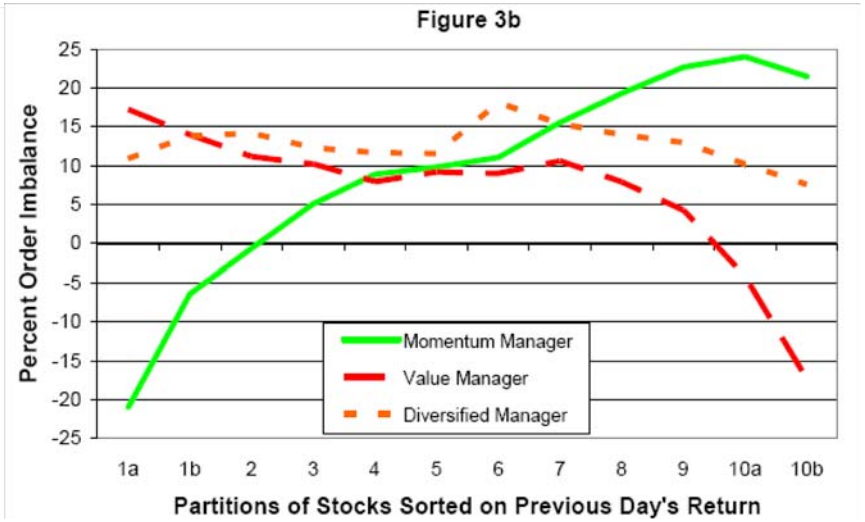


- Notice: Pattern is consistent across different data sets of investor trading
- Figures 2a and 2b are 'univariate' — Figure 3 is 'multivariate'



- Patterns are the opposite for institutional investors (Fund managers)





- Alternative interpretations of results:
- Small investors own few stocks, face short-selling constraints
- (To sell a stock you do not own you need to borrow it first, then you sell it, and then you need to buy it back at end of lending period)
- If new information about the stock:
  - buy if positive news
  - do nothing otherwise
- If no new information about the stock:
  - no trade
- Large investors are not constrained

- Study pattern for stocks that investors already own

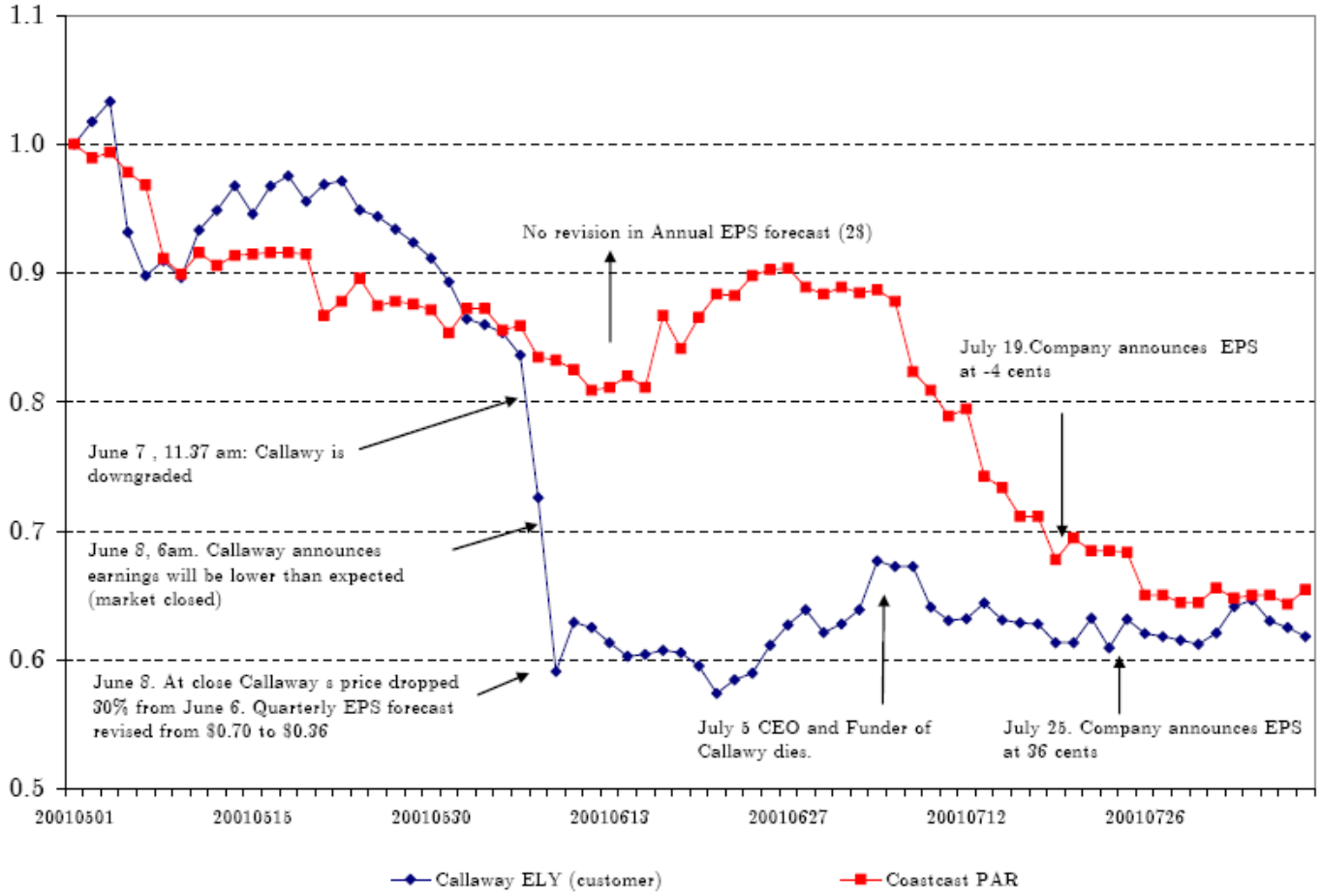
Panel A: Buy-sell imbalance for Stocks Already Owned Sorted on Current Day's Abnormal Trading Volume.

	Large Discount Brokerage		Large Retail Brokerage		Small Discount Brokerage	
Decile	Number Imbalance	Value Imbalance	Number Imbalance	Value Imbalance	Number Imbalance	Value Imbalance
1 (lowest volume)	-54.22	-55.64	-28.74	-33.99	-24.25	-33.22
	(1.43)	(1.89)	(1.42)	(1.84)	(6.28)	(7.58)
2	-51.13	-53.20	-29.46	-34.09	-33.80	-29.67
	(0.78)	(1.07)	(1.09)	(1.36)	(3.18)	(4.47)
3	-48.27	-49.69	-29.54	-31.25	-31.76	-30.05
	(0.64)	(0.95)	(1.04)	(1.31)	(1.71)	(2.44)
4	-47.19	-49.51	-28.69	-32.96	-35.65	-33.93
	(0.56)	(0.88)	(0.94)	(1.11)	(1.26)	(1.96)
5	-45.95	-47.59	-26.71	-31.04	-32.34	-30.01
	(0.53)	(0.81)	(0.90)	(1.07)	(1.12)	(1.63)
6	-45.01	-48.65	-24.32	-29.71	-30.00	-26.50
	(0.49)	(0.71)	(0.90)	(1.04)	(0.97)	(1.42)
7	-42.36	-45.85	-21.83	-30.29	-29.85	-26.21
	(0.50)	(0.71)	(0.84)	(0.89)	(0.95)	(1.33)
8	-39.43	-43.75	-18.72	-27.21	-28.20	-26.23
	(0.51)	(0.71)	(0.81)	(0.87)	(0.87)	(1.22)
9	-35.64	-40.68	-15.45	-21.79	-27.07	-24.99
	(0.52)	(0.70)	(0.78)	(0.91)	(0.85)	(1.21)
10a	-33.03	-39.31	-12.27	-19.97	-26.81	-27.99
	(0.63)	(0.85)	(0.97)	(1.12)	(1.06)	(1.42)
10b (highest volume)	-24.97	-32.82	-15.01	-20.04	-17.32	-19.38
	(0.69)	(0.92)	(1.04)	(1.19)	(0.98)	(1.42)

- **Cohen-Frazzini (2006) – Inattention to subtle links**
- Suppose that you are a investor following company A
- Are you missing more subtle news about Company A?
- Example: Huberman and Regev (2001) – Missing the *Science* article
- Cohen-Frazzini (2006) – Missing the news about your main customer
- Example:
  - Coastcoast Co. is leading manufacturer of golf club heads
  - Callaway Golf Co. is leading retail company for golf equipment
  - What happens after shock to Callaway Co.?

Figure 1: Coastcast Corporation and Callaway Golf Corporation

This figure plots the stock prices of Coastcast Corporation (ticker = PAR) and Callaway Golf Corporation (ticker = ELY) between May and August 2001. Prices are normalized (05/01/2001 = 1).



- Data:
  - Customer- Supplier network – Compustat Segment files (Regulation SFAS 131)
  - 11,484 supplier-customer relationships over 1980-2004
- Preliminary test:
  - Are returns correlated between suppliers and customers?
  - Correlation 0.122 at monthly level

- Computation of long-short returns
  - Sort into 5 quintiles by returns in month t of principal customers, r_t^C
  - By quintile, compute average return in month $t+1$ for portfolio of suppliers r_{t+1}^S: $r_{1,t+1}^S, r_{2,t+1}^S, r_{3,t+1}^S, r_{4,t+1}^S, r_{5,t+1}^S$
  - By quintile q, run regression

$$r_{q,t+1}^S = \alpha_q + \beta_q X_{t+1} + \varepsilon_{q,t+1}$$

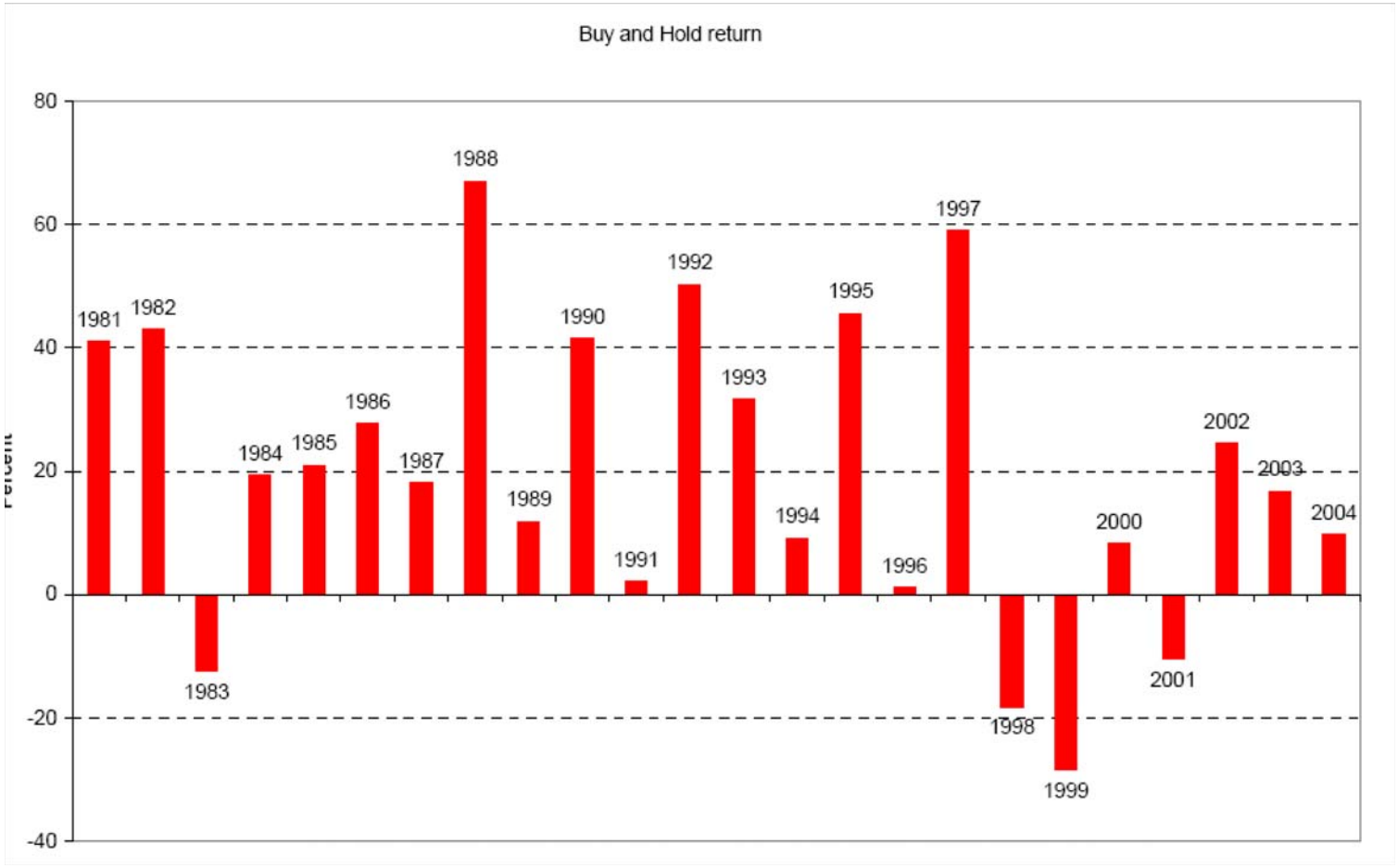
  - X_{t+1} are the so-called factors: market return, size, book-to-market, and momentum (Fama-French Factors)
  - Estimate $\hat{\alpha}_q$ gives the monthly average performance of a portfolio in quintile q
  - Long-Short portfolio: $\hat{\alpha}_5 - \hat{\alpha}_1$

- Results in Table III: *Monthly* abnormal returns of 1.2-1.5 percent (huge)

Panel A: value weights	Q1(low)	Q2	Q3	Q4	Q5(high)	L/S
Excess returns	-0.596	-0.157	0.125	0.313	**0.982**	**1.578**
	[-1.42]	[-0.41]	[0.32]	[0.79]	[2.14]	[3.79]
3-factor alpha	**-1.062**	**-0.796**	**-0.541**	-0.227	**0.493**	**1.555**
	[-3.78]	[-3.61]	[-2.15]	[-0.87]	[1.98]	[3.60]
4-factor alpha	**-0.821**	**-0.741**	-0.488	-0.193	**0.556**	**1.376**
	[-2.93]	[-3.28]	[-1.89]	[-0.72]	[1.99]	[3.13]
5-factor alpha	**-0.797**	**-0.737**	-0.493	-0.019	0.440	**1.237**
	[-2.87]	[-3.04]	[-1.94]	[-0.07]	[1.60]	[2.99]

- Information contained in the customer returns not fully incorporated into supplier returns

- Returns of this strategy are remarkably stable over time

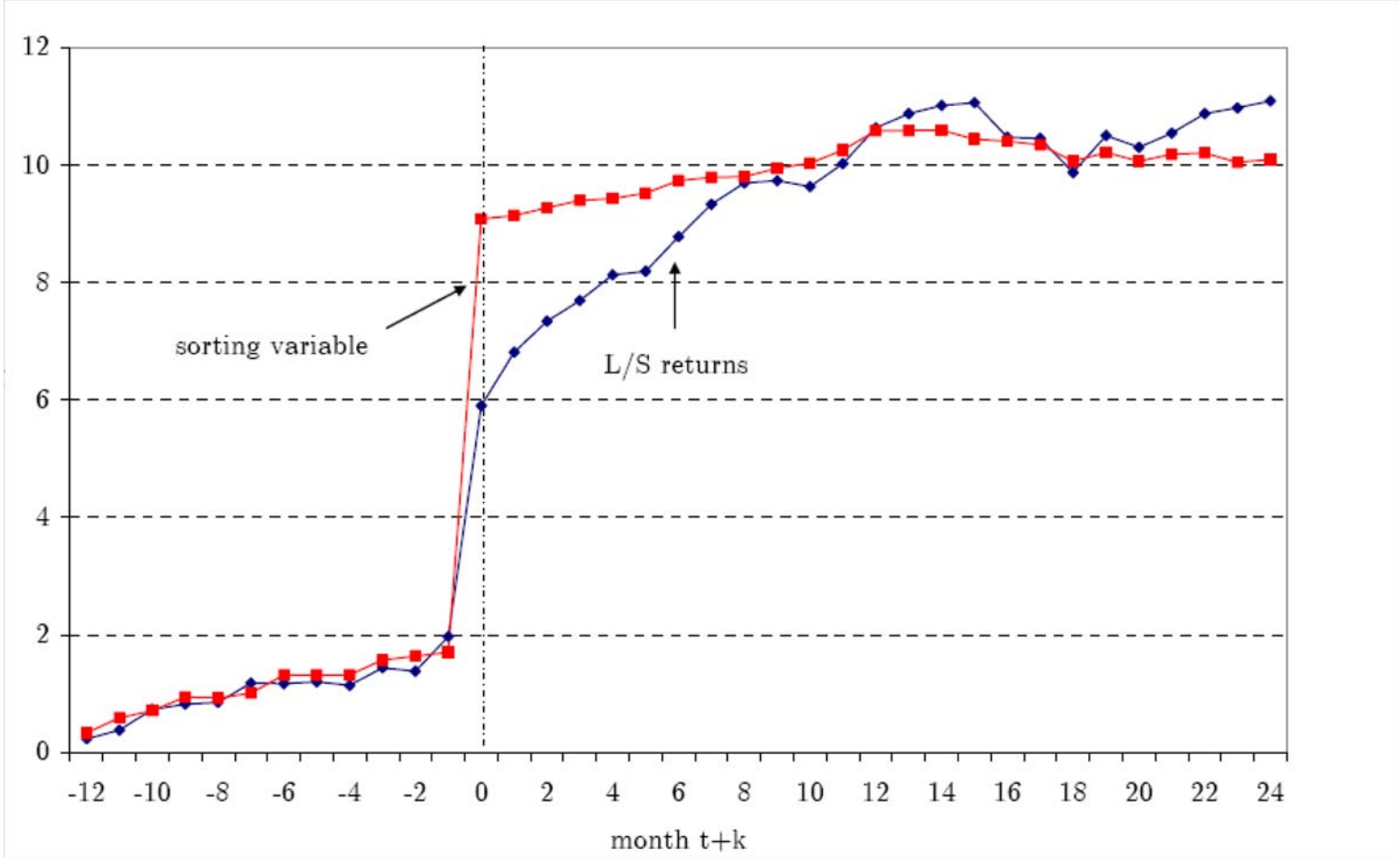


- Can run similar regression to test how quickly the information is incorporated
  - Sort into 5 quintiles by returns in month t of principal customers, r_t^C
  - Compute cumulative return up to month k ahead, that is, $r^S_{q,t->t+k}$
  - By quintile q, run regression of returns of Supplier:

$$r^S_{q,t->t+k} = \alpha_q + \beta_q X_{t+k} + \varepsilon_{q,t+1}$$

  - For comparison, run regression of returns of Customer:

$$r^C_{q,t->t+k} = \alpha_q + \beta_q X_{t+k} + \varepsilon_{q,t+1}$$


12
10
8
6
4
2
0
sorting variable
L/S returns
-12 -10 -8 -6 -4 -2 0 2 4 6 8 10 12 14 16 18 20 22 24
month t+k

- For further test of inattention, examine cases where inattention is more likely
- Measure what share of mutual funds own both companies: COMOWN
- Median Split into High and Low COMOWN (Table IX)

	All stocks		At least 20 mutual funds holding the stock							
			All stocks		At least 10 common funds		Larger firms (CRSP median)		Larger firms (NYSE median)	
Weight	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
Low COMOWN Lower percent of common ownership	1.653 [5.46]	2.301 [5.24]	1.659 [2.96]	2.306 [3.64]	1.469 [1.75]	1.889 [2.08]	1.572 [2.82]	2.288 [3.60]	2.703 [3.49]	2.852 [3.55]
High COMOWN Higher percent of common ownership	0.750 [1.97]	1.098 [2.17]	0.528 [0.98]	0.736 [1.23]	0.532 [0.85]	0.835 [1.21]	0.407 [0.75]	0.732 [1.22]	0.611 [1.05]	1.278 [2.11]
High-Low	-0.903 [-2.08]	-1.203 [-1.99]	-1.131 [-1.60]	-1.571 [-1.98]	-0.937 [-0.92]	-1.054 [-0.95]	-1.165 [-1.66]	-1.557 [-1.96]	-2.093 [-2.42]	-1.575 [-1.71]

- Supporting evidence from other similar papers

- **Hong, Torous, Valkanov (2002)**
  - Stock returns in an industry in month t predict returns in another industry in month $t + 1$
  - Investors not good at handling indirect links –> Indirect effects of industry-specific shocks neglected
  - Example: forecasted increase in price of oil
  - Oil industry reacts immediately, Other industries with delay

- **Pollet (2002)**
  - Scandinavian stock market (oil extraction) predicts US stock market (negatively) one month ahead
  - Oil industry predicts several industries one month ahead (again negatively)

- **DellaVigna and Pollet (2005) – Inattention to distant future**
- Another way to simplify decisions is to neglect distant futures when making forecasts
- Identify this using forecastable demographic shifts

- Substantial cohort size fluctuations over the 20th century
- Consumers at different ages purchase different goods
- Changes in cohort size $\Longrightarrow$ predictable changes in profits for different goods
- How do investors react to these forecastable shifts?

- **Example.** Large cohort born in 2004

- Positive demand shift for school buses in 2010 $\Longrightarrow$ Revenue increases in 2010

- Profits (earnings) for bus manufacturers?
  - Perfect Competition. Abnormal profits do not change in 2010
  - Imperfect Competition. Increased earnings in 2010

- How do investors react?
  1. Attentive investors:
     - Stock prices adjust in 2004
     - No forecastability of returns using demographic shifts
  2. Investors inattentive to future shifts:
     - Price does not adjust until 2010
     - Predictable stock returns using contemporaneous demand growth
  3. Investors attentive up to 5 years
     - Price does not adjust until 2005
     - Predictable stock returns using consumption growth 5 years ahead

- **Step 1.** Forecast future cohort sizes using current demographic data

- **Step 2.** Estimate consumption of 48 different goods by age groups (CEX data)

- **Step 3.** Compute forecasted growth demand due to demographics into the future:
  - Demand increase in the short-term: $\hat{c}_{i,t+5} - \hat{c}_{i,t}$
  - Demand increase in the long-term: $\hat{c}_{i,t+10} - \hat{c}_{i,t+5}$

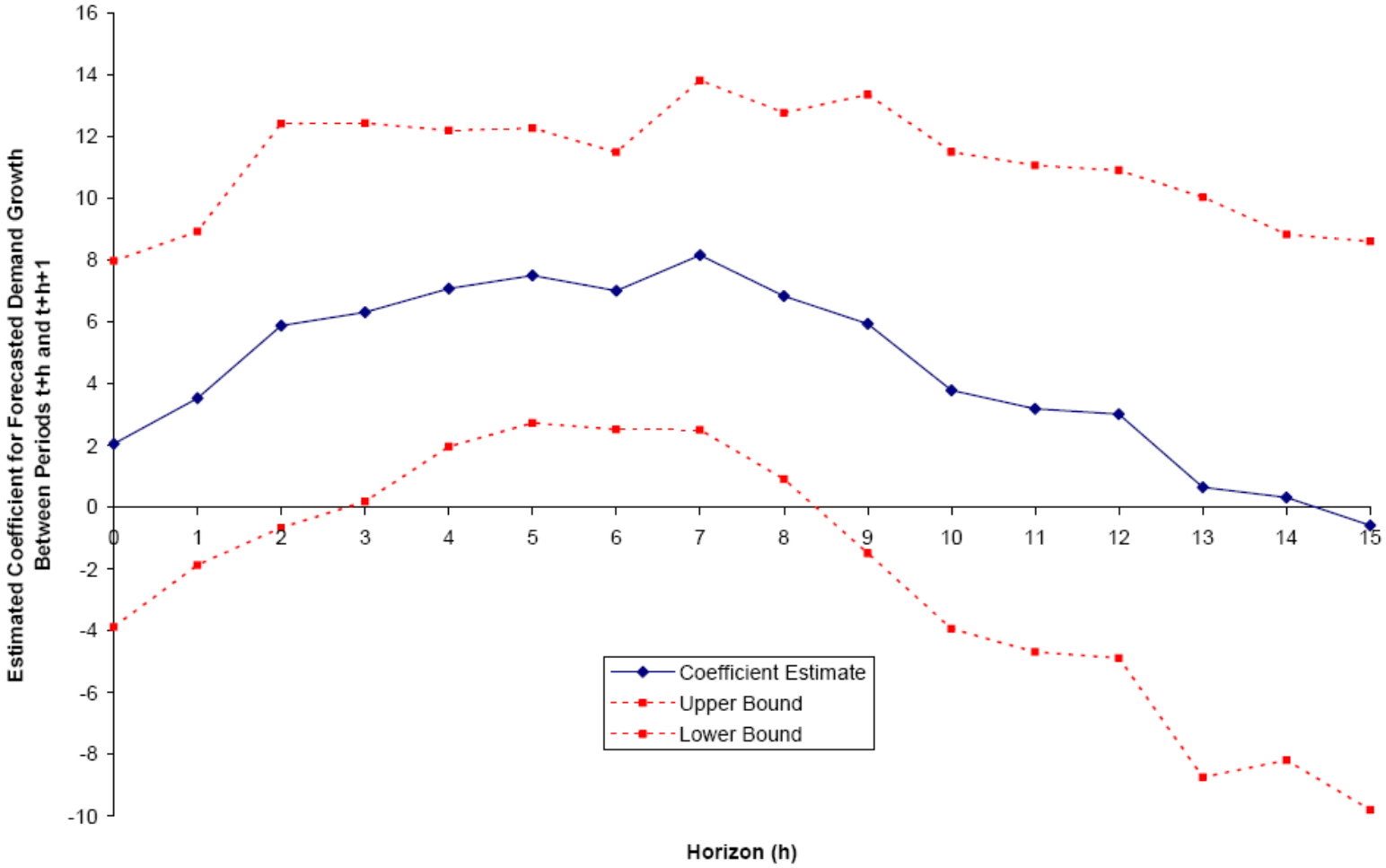
- Does this demand forecast returns? Regression of annual abnormal returns $ar_{i,t+1}$

$$\alpha r_{i,t+1} = \gamma + \delta_0 \left[\hat{c}_{i,t+5} - \hat{c}_{i,t}\right] /5 + \delta_1 \left[\hat{c}_{i,t+10} - \hat{c}_{i,t+5}\right] /5 + \varepsilon_{i,t+1}$$

Table 6. Predictability of Stock Returns Using Demographic Changes

Sample	Dependent Variable: Annual Beta-Adjusted Log Industry Stock Return at t+1								
	Demographic Industries						All Industries		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	-0.0967	0.1004	0.3571	-0.0507	-0.0498	0.0606	-0.0774	-0.0672	0.1213
	(0.05560)*	(0.1122)	(0.0858)***	(0.0332)	(0.0444)	(0.0406)	(0.0472)	(0.0607)	(0.0668)*
Forecasted annualized demand growth between *t* and *t+5*	-0.4484	-0.5726	-2.2113	-1.5509	-1.7362	-2.7576	-1.8485	-1.2779	-2.1448
	(4.3929)	(4.2358)	(3.4036)	(2.7948)	(2.9935)	(2.8176)	(4.2901)	(4.7931)	(3.2678)
Forecasted annualized demand growth between *t+5* and *t+10*	8.7203	11.0365	6.8243	5.3723	5.8355	5.2183	8.3035	10.4185	5.8045
	(4.2206)**	(3.9489)***	(3.5568)*	(3.3562)	(3.3223)*	(2.7478)*	(3.6389)**	(4.2698)**	(3.8659)
Industry Fixed Effects		X	X		X	X		X	X
Year Fixed Effects			X			X			X
Sample: 1974 to 2003	X	X	X				X	X	X
Sample: 1939 to 2003				X	X	X			
R^2	0.0233	0.1121	0.3202	0.0089	0.0676	0.3162	0.0129	0.0484	0.1923
N	*N* = 566	*N* = 566	*N* = 566	*N* = 917	*N* = 917	*N* = 917	*N* = 1387	*N* = 1387	*N* = 1387

Figure 4: Return Predictability Coefficient for Demand Growth Forecasts at Different Horizons



Notes: The estimated coefficient for each horizon is from a univariate OLS regression of abnormal returns at $t+1$ on forecasted consumption growth between $t+h$ and $t+h+1$ for the subsample of *Demographic Industries* over the period 1974-2003. The confidence intervals are constructed using robust standard errors clustered by year and then scaled by a function of the autocorrelation coefficient estimated from the sample orthogonality conditions.

- Results:
  1. Demographic shifts 5 to 10 years ahead can forecast industry-level stock returns
  2. Yearly portfolio returns of 5 to 10 percent
  3. Inattention of investors to information beyond approx. 5 years
  4. Evidence on analyst horizon: Earning forecasts beyond 3 years exist for only 10% of companies (IBES)

- Where else long-term future matters?
  - Job choices
  - Construction of new plant...

2 Menu Effects: Introduction

- Limited Attention:
  - Too little weight on some dimension (*Science* article, shipping cost, posted price, news to customers. indirect link, distant future)
  - Too much weight on salient dimension (*NYT* article, auction price, recent returns or volume)
- Any other examples?

- We now consider more explicitly a specific context: **Choice from Fixed Menu**
  - Health insurance plans
  - Savings plans
  - Politicians on a ballot
  - ...

- We explore three common (non-rational) heuristics:
  1. Excess Diversification (1/n heuristics)
  2. Use of Irrelevant Information
  3. Choice Overload

3 Menu Effects: 1/n Heuristics

- **Excess Diversification or 1/n Heuristics**
  - Facing a menu of choices, if possible allocate
  - (Notice: Not possible for example for health insurance plan)

- Example: Experiment of Simonson (1990)
  - Subjects have to pick one snack out of six (cannot pick >1) in 3 different weeks
  - Sequential choice: only 9 percent picks three different snacks
  - Simultaneous choice ex ante: 64 percent chooses three different snacks

- **Benartzi and Thaler (2001)**
- Study 401(k) plan choices
- Data:
  - 1996 plan assets for 162 companies
  - Aggregate allocations, no individual data
- Average of 6.8 plan options per company
- Lacking individual data, cannot estimate if allocation is truly 1/n
- Proxy: Is there more investment in stocks where more stocks are offered?

- They estimate the relationship

$$\%Invested\ In\ Equity = \alpha + .36\ (.04) * \%Equity\ Options + \beta X$$

TABLE 7—THE RELATIVE NUMBER OF EQUITY-TYPE INVESTMENT OPTIONS AND ASSET ALLOCATION: A REGRESSION ANALYSIS
(DEPENDENT VARIABLE: THE PERCENTAGE OF PLAN ASSETS INVESTED IN EQUITIES)

WLS regression model	Intercept	Relative number of equity options	Indicator whether the plan offers company stock	Log of the plan assets in thousands	Adjusted R^2
		Panel A: No Industry Indicators (N = 162)			
1	22.09	63.14			34.61 percent
	(4.94)	(9.28)			
2	29.72	36.75	15.05		43.45 percent
	(6.73)	(4.49)	(5.10)		
3	10.57	36.77	14.78	1.40	44.16 percent
	(0.89)	(4.52)	(5.03)	(1.74)	
		Panel B: Including Industry Indicators Based on 2-Digit SIC Codes (N = 142)			
4		58.68			55.12 percent
		(8.29)			
5		43.90	12.93		58.91 percent
		(5.39)	(3.26)		
6		47.07	9.09	4.13	61.79 percent
		(5.93)	(2.25)	(2.96)	

Notes: The initial sample consists of the June 1996 MMD sample of 401(k) plans. Eight plans with less than four investment options were excluded, resulting in a sample of 162 plans. When we include industry indicators, the sample is further reduced to 142 plans due to missing industry information. The table reports WLS regression estimates with plan assets as weights (t-statistics are in parentheses).

- For every ten percent additional offering in stocks, the percent invested in stocks increases by 3.6 percent

- Notice: availability of company stocks is a key determinant of holdings in stocks

- Issues of endogeneity:
  - Companies offer more stock when more demand for it
  - Partial response: Industry controls

- Additional evidence based on a survey
  - Ask people to allocate between Fund A and Fund B
  - Vary Fund A and B to see if people respond in allocation

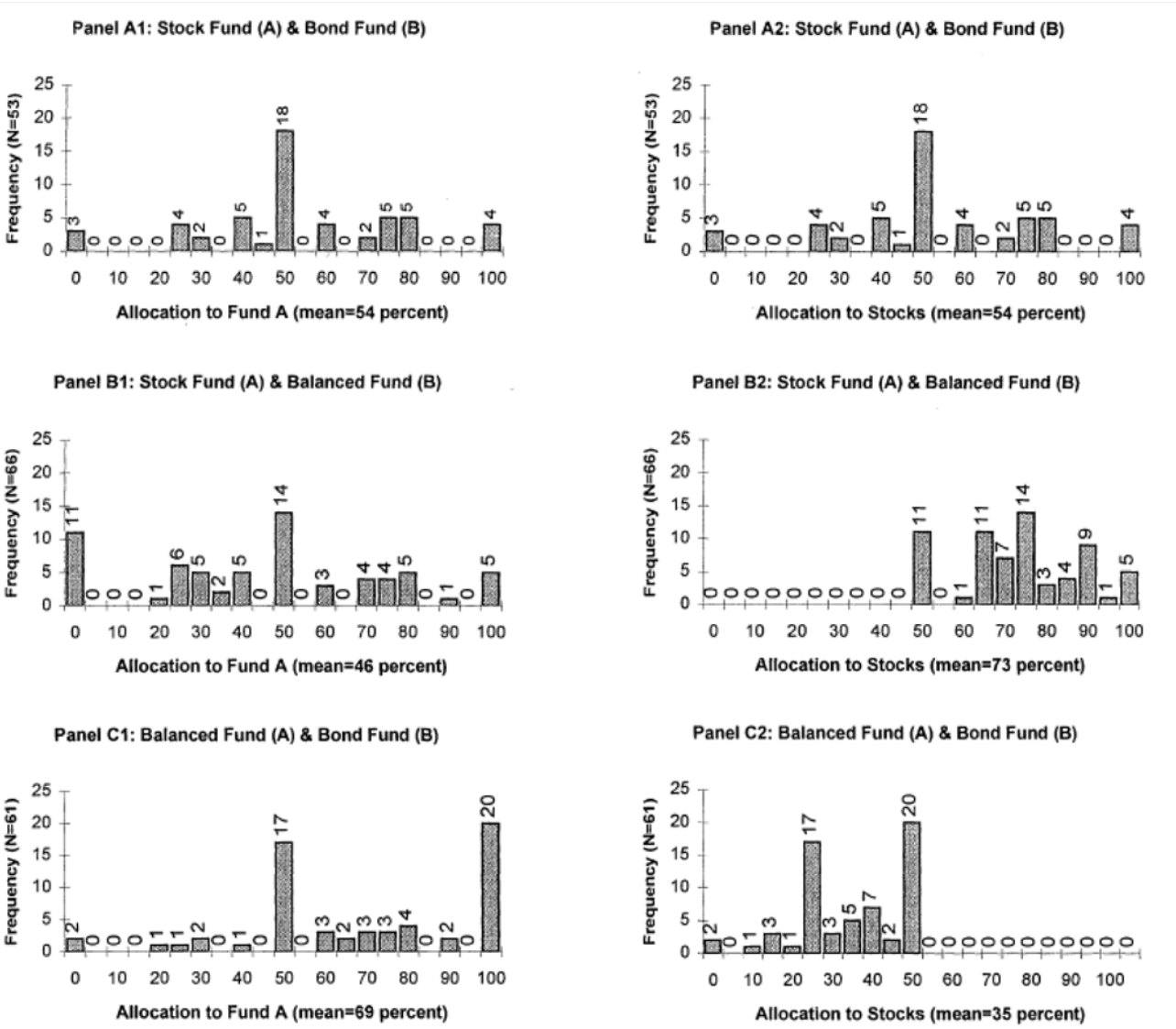


FIGURE 1. VERBAL SAVINGS QUESTIONNAIRE: HISTOGRAMS OF THE ALLOCATION TO FUND A AND THE RESULTING ALLOCATION TO STOCKS

- People respond to changes in content of Fund A and B, but incompletely

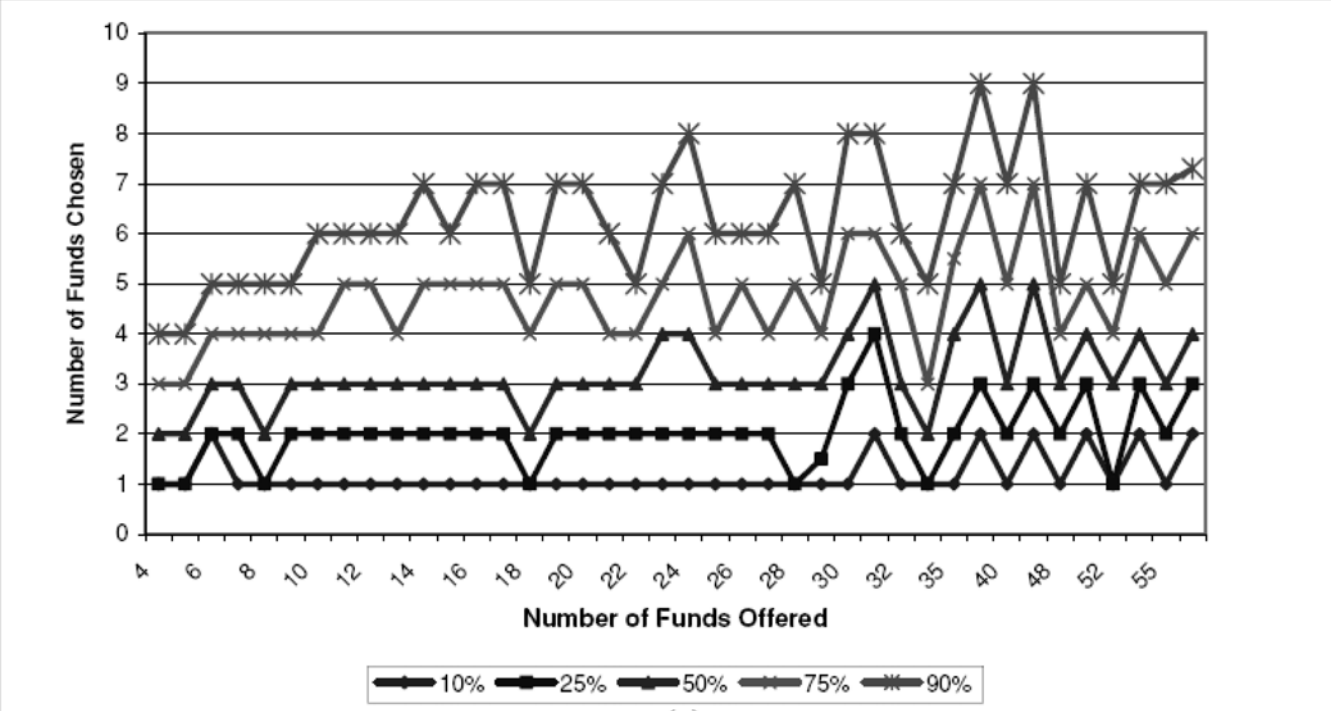
- Issues:
  - Not for real payoff
  - Low response rate (12%)
  - People dislike extreme in responses

- **Huberman and Jiang (2006)**

- Data:
  - Vanguard data to test BT (2001)
  - Data on individual choices of participants
  - Half a million 401(k) participants
  - 647 Defined Contribution plans in year 2001
  - Average participation rate 71 percent

- Summary Statistics:
  - 3.48 plans choices on average
  - 13.66 plans available on average

- **Finding 1**. People do not literally do 1/n, definitely not for n large
  - Flat relationship between $\#Chosen$ and $\#Offered$ for $\#Offered > 10$
  - BT (2001): could not estimate this + $\#Offered$ rarely above 15



- Regressions specification:

$$\#Chosen = \alpha + \beta * \#Offered + \beta X$$

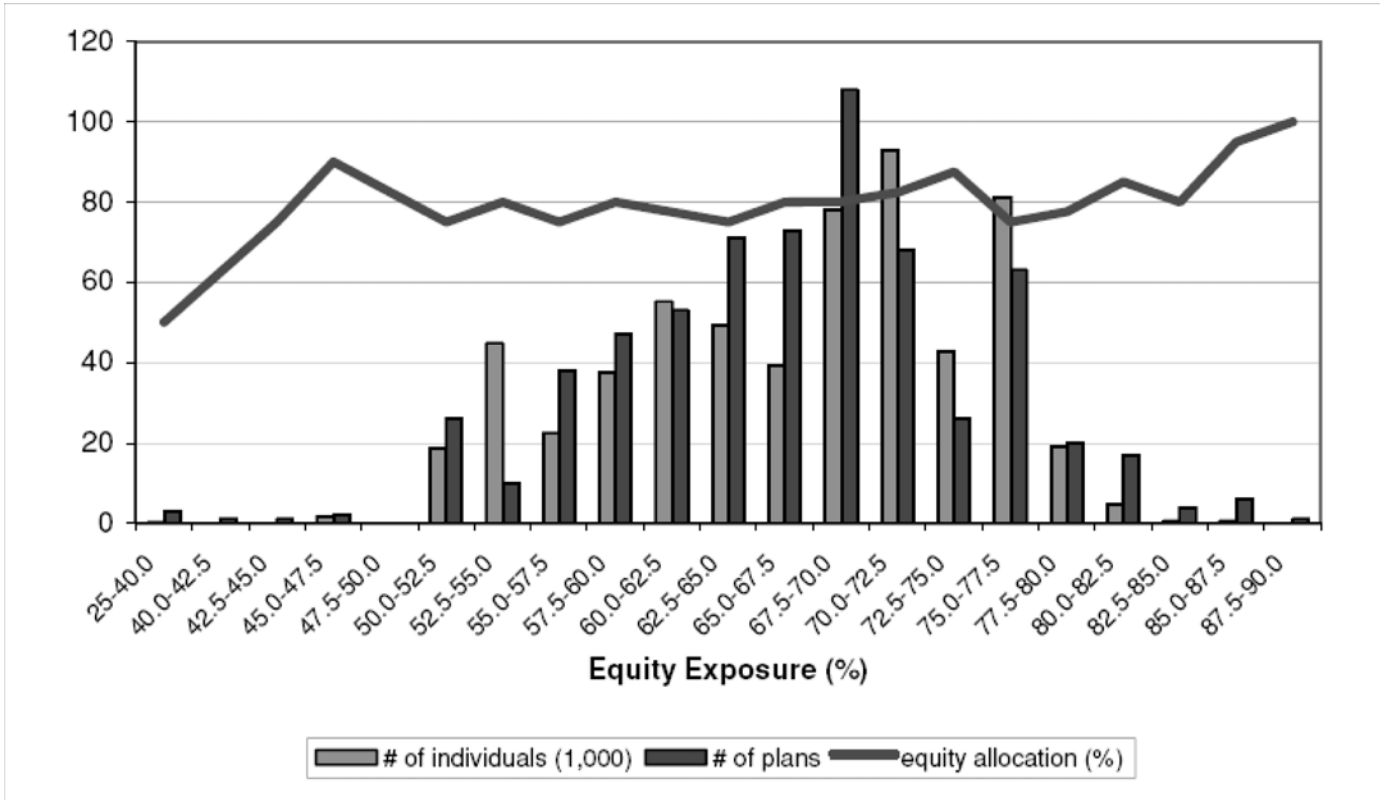
	All Participants			
	NCHOSEN			
	(1)		(2)	
	COEF × 100	SE × 100	COEF × 100	SE × 100
NCHOICE	0.95	0.70	1.03	0.70
CONTRIBUTION	10.54*	0.56	—	—
COMP	−0.02	2.30	33.05*	2.87
WEALTH	1.20*	0.51	3.90*	0.55
FEMALE	14.51*	1.97	14.84*	1.95
AGE	−1.66*	0.10	−1.35*	0.09
TENURE	0.88*	0.26	0.95*	0.26
MATCH	0.00	0.24	0.00	0.23
COMPSTK	70.67*	12.72	67.16*	12.68
DB	−6.31	15.35	−6.06	15.21
WEB	1.17	0.71	1.39	0.71
NEMPLOY	−10.28*	4.79	−9.25*	4.73
Intercept	1036.95	284.44	664.25	290.06
No. of individuals and plans	572,157	641	572,157	641
R^2	0.075		0.060	

- **Finding 2.** Employees do 1/n on the *chosen* funds if
  - number n is small
  - $1/n$ is round number

No. of Funds Chosen (1)	New Entrants (%) (2)	$\underline{H}$ (3)	$\bar{H}$ (4)	$Freq_1$ (%) (5)	$Freq_1/\max_{j\neq 1}(Freq_j)$ (6)
1	38.6	1.0000	1.0000	–	–
2	17.5	0.5000	0.5050	64.0	12.81*
3	15.6	0.3333	0.3356	17.9	1.78*
4	13.2	0.2500	0.2513	37.4	8.89*
5	7.3	0.2000	0.2008	26.6	8.19*
6	3.5	0.1667	0.1672	1.3	0.25
7	1.8	0.1429	0.1433	1.0	0.19
8	1.1	0.1250	0.1253	3.9	1.14
9	0.6	0.1111	0.1114	5.1	1.20
10	0.4	0.1000	0.1002	53.3	13.50*

- **Finding 3.** Equity choice (most similar to BT (2001))

- In aggregate very mild relationship between $\%Equity$ and $\%EquityOffered$



- Split by $\#Offered$:
  1. For $\#Offered \leq 10$, BT finding replicates:

$$\%Equity = \alpha + .292 * \%EquityOffered$$
$$(.063)$$

  2. For $\#Offered > 10$, no effect:

$$\%Equity = \alpha + .058 * \%EquityOffered$$
$$(.068)$$

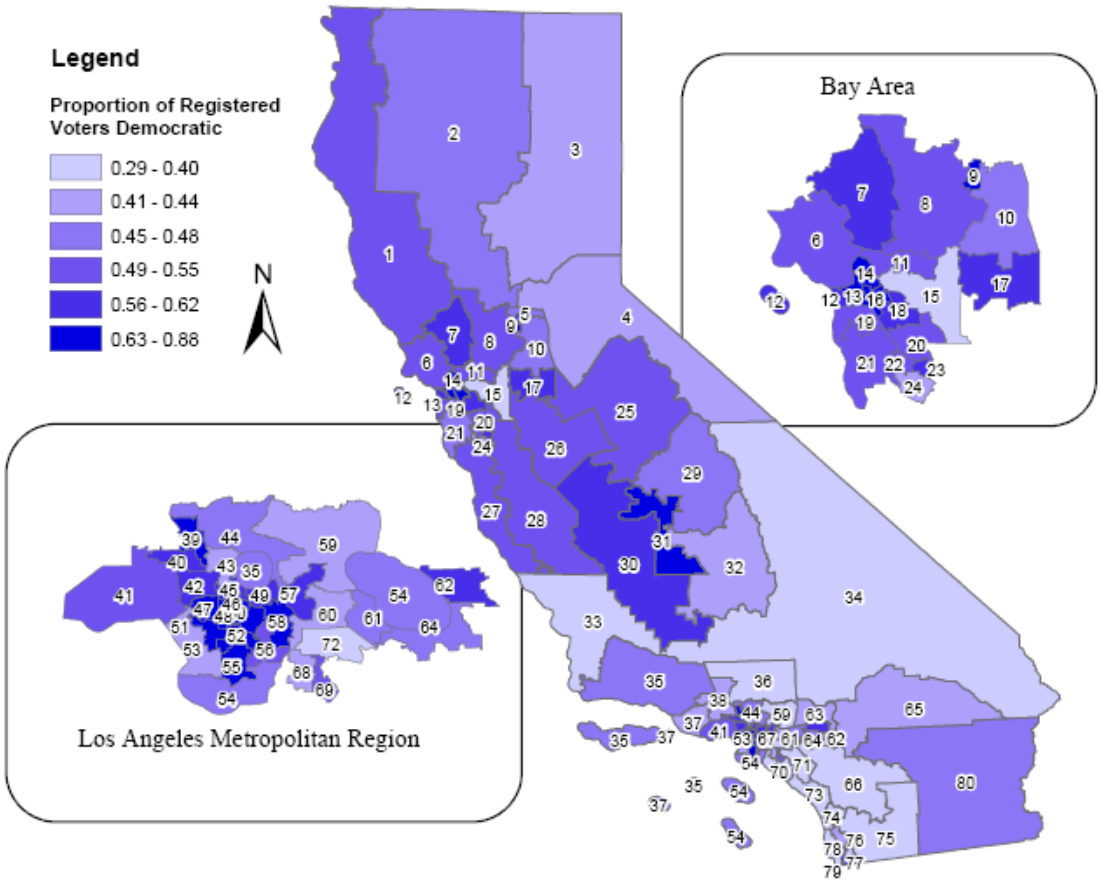
	(1)		(2)		(3)		(4)	
	All *NFunds*				*NFunds* ≤ 10		*NFunds* > 10	
	COEF	SE	COEF	SE	COEF	SE	COEF	SE
Panel A: Full Sample—Uniform Sensitivity								
%EQOffered	0.175	0.274	0.177*	0.088	0.292*	0.107	0.058	0.09
R^2	0.000		0.061		0.063		0.068	

- Psychologically plausible:
  - Small menu set guides choices –> Approximate 1/n in weaker form
  - Larger menu set does not
- BT-HJ debate: Interesting case where at the end we really understand better the phenomenon

4 Use of Irrelevant Information: Voting

- What happens with large set of options if decision-maker uninformed?
- Possibly use of irrelevant information to choose
- Example: Order of options
- **Ho and Imai (2004).** Order of candidates may matter as well
- Exploit randomization of ballot order in California
- Years: 1978-2002
- Data: 80 Assembly Districts

- Areas of randomization



- Use of randomized alphabet to determine first candidate on ballot

Year	Election	Randomized Alphabet
1982	Primary	S C X D Q G W R V Y U A N H L P B K J I E T O M F Z
	General	L S N D X A M W V T O F I B K Y U P E Q C J Z H R G
1983	Consolidated	L C P K I A U G Z O N B X D W H E M F V R S T Y Q J
1984	Primary	W M F B Q Y T D J U O V I K R H S N P C A E L Z G X
	General	V W I H R Q G J O M T S Y C A F U X K B P E Z N D L
1986	General	Q N H U B J E G M V L W X C K O F D Z R Y I T S P A
1988	Primary	W O K N Q A V T H J F Z L B U D Y M I R G C E S X P
	General	S W F M K J U Y A T V G O N Q B D E P L Z C I X R H
1990	Primary	E J B Y Q F K M O V X L N Z C W A P R D G T H I S U
	General	W F C L D I N J H V K O S A R E Q B T M Y U G Z X P
1992	Primary	U R F A J C D N M K P Z Y X G W O H E B I S V L Q T
	General	F Y U A J S B Z G O E Q R L I M H V N T P D K X C W
1994	Primary	K J H G A M I Q U N C Z S W V R P Y B L O T D F E X
	General	V I A E M S O K L B G N W Y D P U F Z Q J X C R H T
1996	Primary	G E F C Y P D B Z I V A U S M L H K N T O J Q R X W
	General	J Y E P A U S Q B H T R K N L X F D O G M W I Z C V
1998	Primary	L W U J X K C N D O Q A P T Z R Y F E V B H G I M S
	General	W K D N V A G P Y C Z I S T L J X Q O F H R B U M E
2000	Primary	O P C Y I H X Z V R S Q E K L G D W J U T M B F A N
	General	I T F G J S W R N M K U Y L D C Q A H X O E B V P Z
2002	Primary	W I Z C O M A Q U K X E B Y N P T R L V S J H D F G
	General	H M V P E B Q U G N D K X Z J A W Y C O S F I T R L
2003	Recall	R W Q O J M V A H B S G Z X N T C I E K U P D Y F L

Table 1: Randomized Alphabets Used for the California Statewide Elections Since 1982.

- Observe each candidate in different orders in different districts

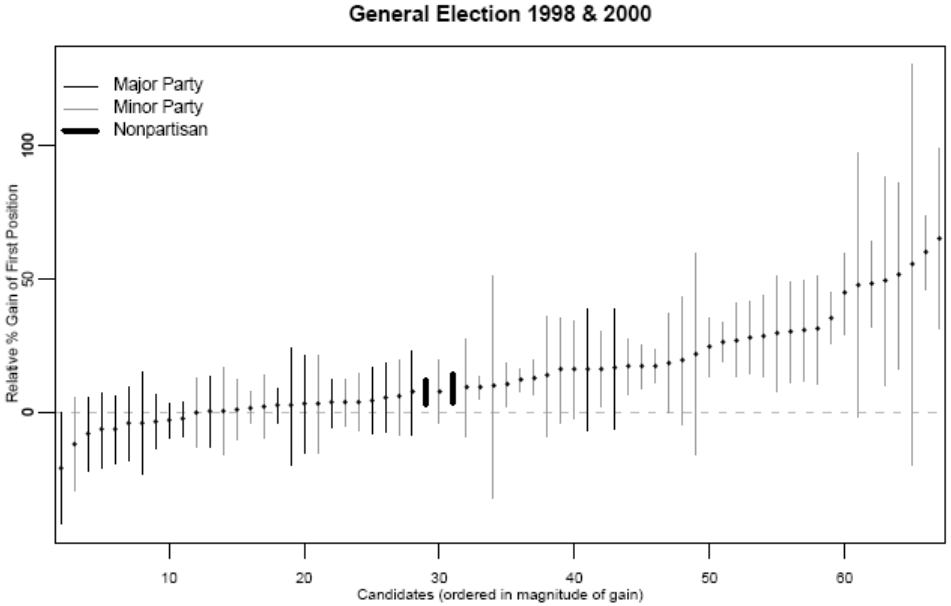
- Compute absolute vote (Y) gain

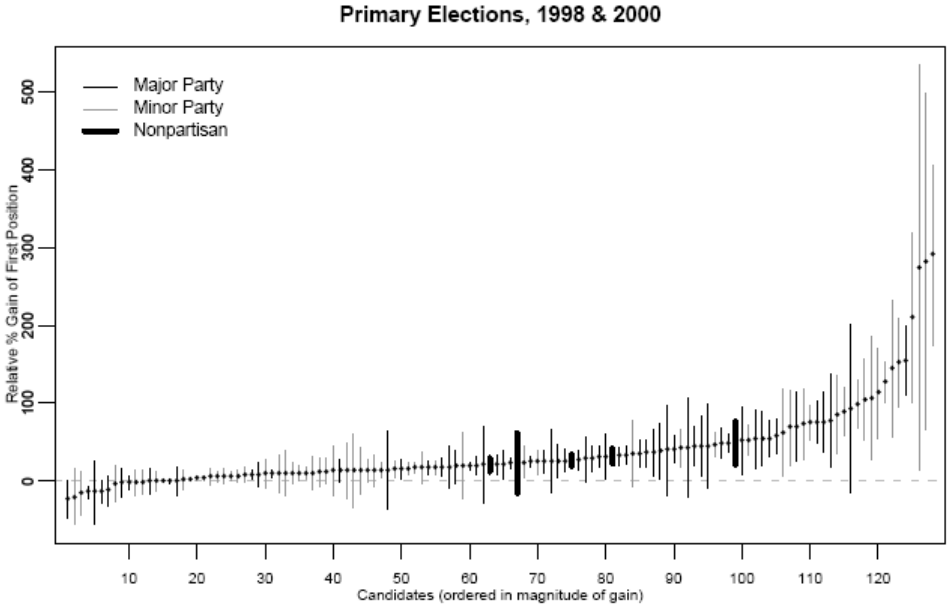
$$E\left[Y\left(i=1\right)-Y\left(i\neq 1\right)\right]$$

  and percentage vote gain

$$E\left[Y\left(i=1\right)-Y\left(i\neq 1\right)\right]/E\left[Y\left(i\neq 1\right)\right]$$

- Result:
  - Small to no effect for major candidates
  - Large effects on minor candidates


General Election 1998 & 2000
Major Party
Minor Party
Nonpartisan
Relative % Gain of First Position
0
50
100
10
20
30
40
50
60
Candidates (ordered in magnitude of gain)


Primary Elections, 1998 & 2000
Major Party
Minor Party
Nonpartisan
Relative % Gain of First Position
0
100
200
300
400
500
10
20
30
40
50
60
70
80
90
100
110
120
Candidates (ordered in magnitude of gain)

	General				Primary			
	Absolute		Relative		Absolute		Relative	
	ATE	SE	ATE	SE	ATE	SE	ATE	SE
Democratic	0.05	0.46	0.25	0.90	1.89	0.32	43.58	5.53
Republican	-0.06	0.53	-0.43	1.29	2.16	0.46	33.62	5.91
American Independent	0.16	0.02	20.83	1.39	2.33	0.15	26.76	3.55
Green	0.56	0.17	21.18	5.82	3.15	1.16	6.24	3.54
Libertarian	0.23	0.02	14.56	1.03	6.59	1.42	71.92	13.55
Natural Law	0.31	0.06	26.13	2.85	0.40	0.08	44.78	5.45
Peace and Freedom	0.28	0.03	25.49	2.15	6.31	0.53	14.75	1.43
Reform	0.26	0.07	19.57	2.23	4.11	1.56	48.45	9.66
Nonpartisan	1.95	0.30	9.21	3.31	3.44	0.78	19.42	4.05

Table 3: Party-Specific Average Causal Effects of Being Listed in First Position on Ballots Using All Races from 1978 to 2002. ATE and SE represent the average causal effects and their standard errors, respectively. For general and primary elections, the left two columns present the estimates of average absolute gains in terms of the total or party vote, respectively, while the right two columns show those of average relative gains. Each candidate-specific effect is averaged over different races to obtain the overall average effect for each party. In general elections, only minor party and nonpartisan candidates are affected by the ballot order. In primaries, however, the candidates of all parties are affected. The largest effects are found for nonpartisan candidates.

5 Next Lecture

- Next lecture in two weeks!
- Behavioral Asset Pricing
- Choice Overload
- Social Pressure