The Effects of Portfolio Choice on Retirement Wealth Outcomes

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The Growing Importance of Asset Accumulation

- U.S. is witnessing a shift toward increasing self-reliance in retirement planning
  - Shift from DB to DC pension plans
  - Potential for personal accounts as part of Social Security
- Individual accounts put more emphasis on creating financial wealth for retirement, rather than relying on a formula-based pension approach
- Portfolio choice one key determinant of retirement wealth (allocation, location, expenses)

Plan Design and Behavior

- Plan design can have important effects on retirement wealth accumulation
  - Default options for participation
    - Madrian & Shea (2001); Choi, Laibson, Madrian, & Metrick (2002)
  - Number and type of investment options available
    - Benartzi & Thaler (2001); Liang & Weisbenner (2002)
  - Match Policy
    - Benartzi (2001); Brown, Liang, & Weisbenner (2005)

Our Focus

- Is it a good idea to increase the number of investment options available to plan participants?
  - Should 401(k) plan providers offer lots of options, or very few?
  - If personal accounts were added to Social Security, how many options should people have?

Differing Views on Value of Large Number of Options

- Standard economics view: “More options are good”
  - Constraints are either not binding or bad, never good
- Standard portfolio theory: “More options are completely unnecessary”
  - Only need one risky asset (the “market” portfolio) and one riskless asset
- Behavioral view: “Choice is potentially bad”
  - Information overload if too many options
    - Huberman, Iyengar, & Jiang (2003); Agnew & Szykman (2004)

Our Specific Questions

1. How has the number and mix of options offered by 401(k) plans evolved over time?
2. How does an increase in the choice set affect portfolio allocations?
3. What implications does this likely have for retirement wealth?

Data Sources

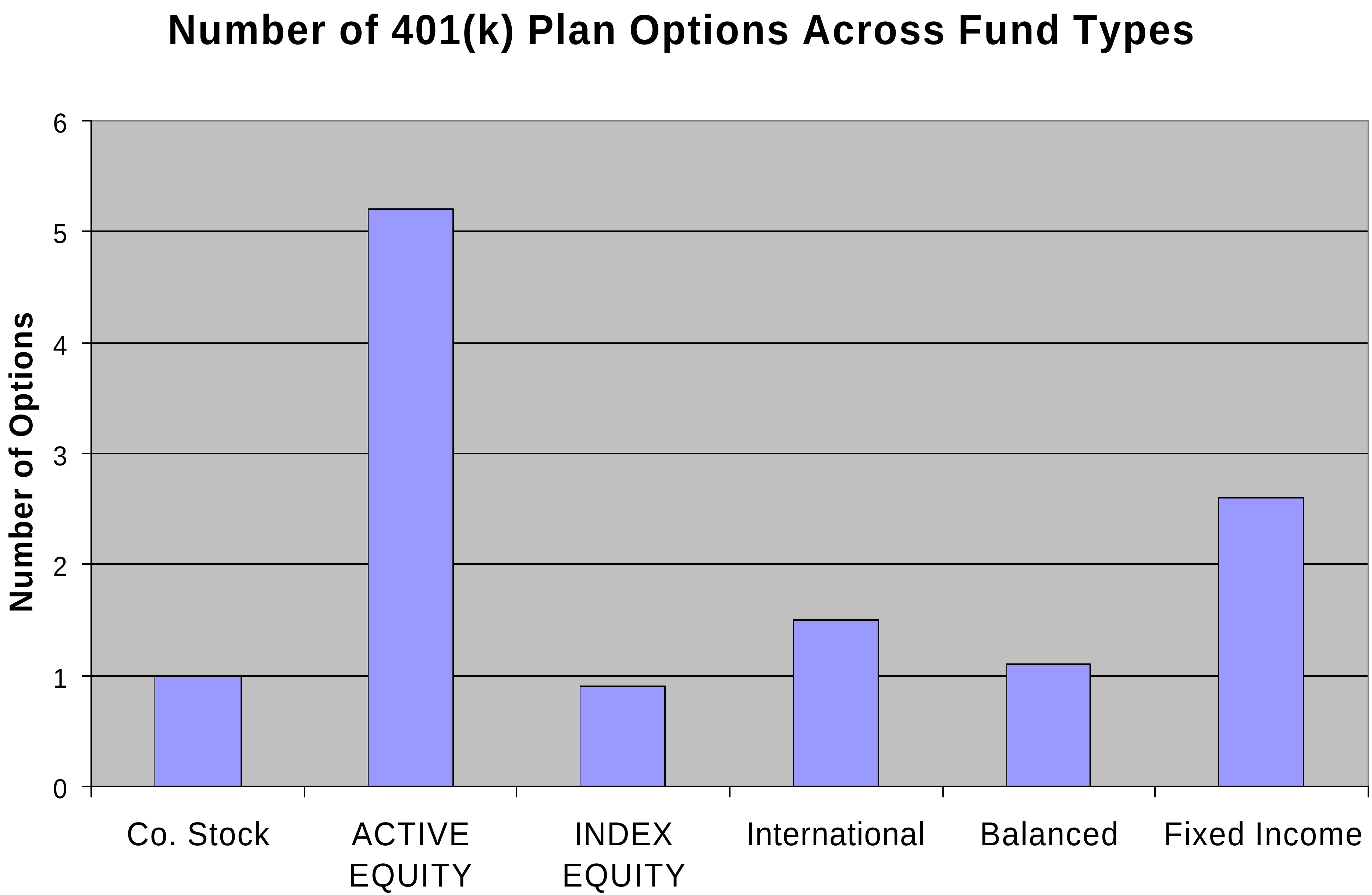
- 11-k filings with the SEC: filed by firms with 401(k) plans that offer employer stock as an investment option (and it is deemed new issuance)
  - Detailed information on specific plan investment options and account balances
- Can merge specific mutual fund options with Morningstar data to get:
  - Fund type
  - Returns and expenses
- Data is hand-collected (and then hand matched)
  - **Made possible by SSA!**

Our Sample

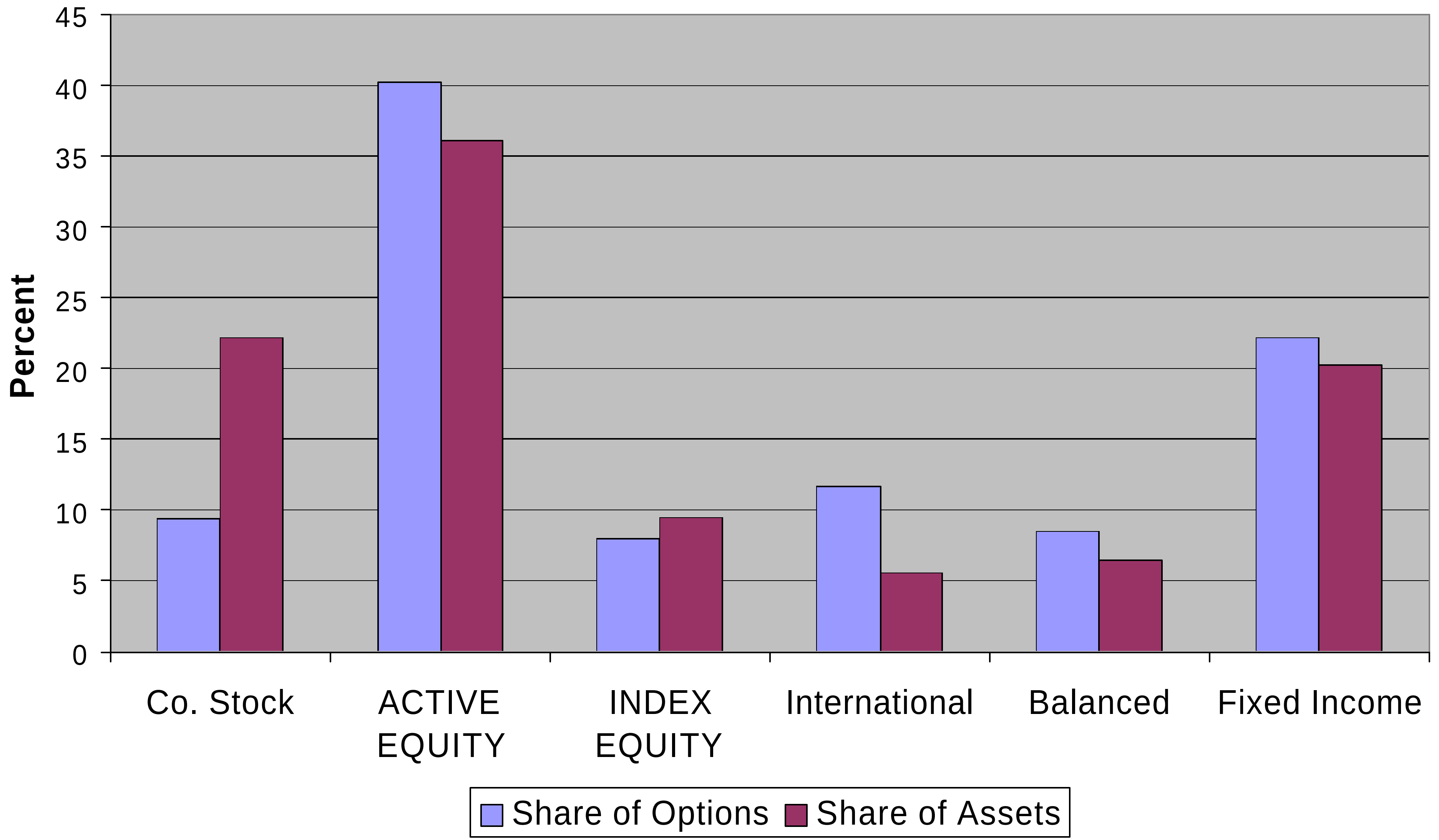
- We track firms that filed an 11-k in 1998 and follow over next 4 years (1999 – 2002)
  - ≈ 600 unique firms
  - ≈1800 firm-year observations
  - ≈22,000 firm-year-fund observations
- Broad cross section
  - Represent nearly 2/5 of 401(k) assets held by all publicly traded firms
  - Good representation across industries
  - About 1/5 belong to S&P 500

Growth in Mutual Funds

- From 1990 to 2003, the number of mutual funds available to investors in the U.S. rose from ≈3100 to ≈8100
- Similar rate of growth in number of investment options offered in 401(k) plans
- Equity funds account for the vast majority of the increase in the total number of funds


Number of 401(k) Plan Options Across Fund Types
Number of Options
0
1
2
3
4
5
6
Co. Stock
ACTIVE EQUITY
INDEX EQUITY
International
Balanced
Fixed Income

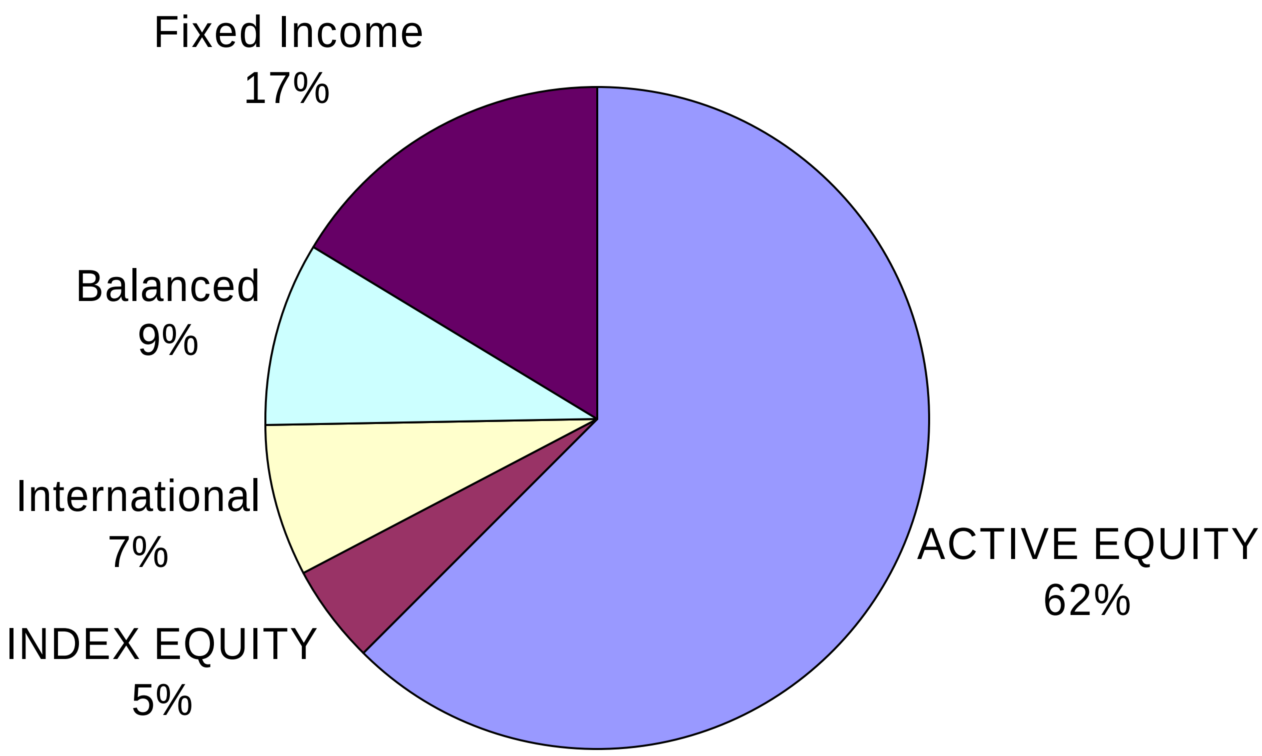
Share of Options & Assets Across Fund Types



What are the New Options?

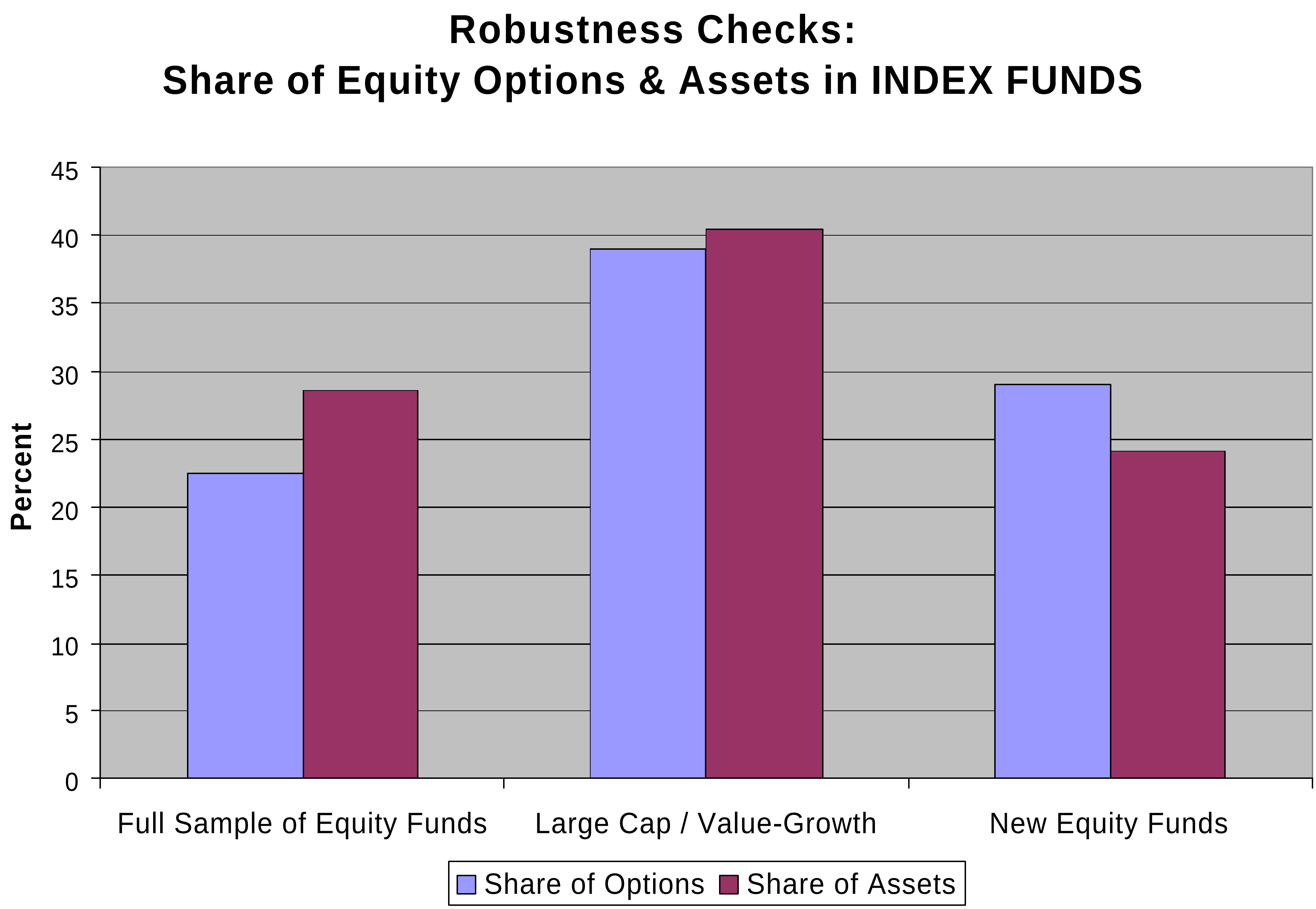
Options	Co. Stk	Fixed	Balance	Int’l	Index	Active
8	1.0	2.0	0.7	1.0	0.7	2.6
10	1.0	2.3	0.8	1.1	0.8	3.9
12	1.0	2.6	0.9	1.5	0.9	5.0
14	1.0	2.8	1.4	1.5	1.0	6.3
16	1.0	2.9	1.7	1.8	1.0	7.7
18	1.0	3.5	1.6	2.4	1.0	8.6

Share of Options ADDED to Plan, 2000-2002



Relation Between Number of Options & Asset Balances

- Regress share of assets in fund type upon share of options in plan of that fund type
  - Find strong relation for assets such as company stock and equity index funds
  - Find weak relation for assets such as international funds and fixed income funds


Robustness Checks:
Share of Equity Options & Assets in INDEX FUNDS
Percent
0
5
10
15
20
25
30
35
40
45
Full Sample of Equity Funds
Large Cap / Value-Growth
New Equity Funds
Share of Options
Share of Assets

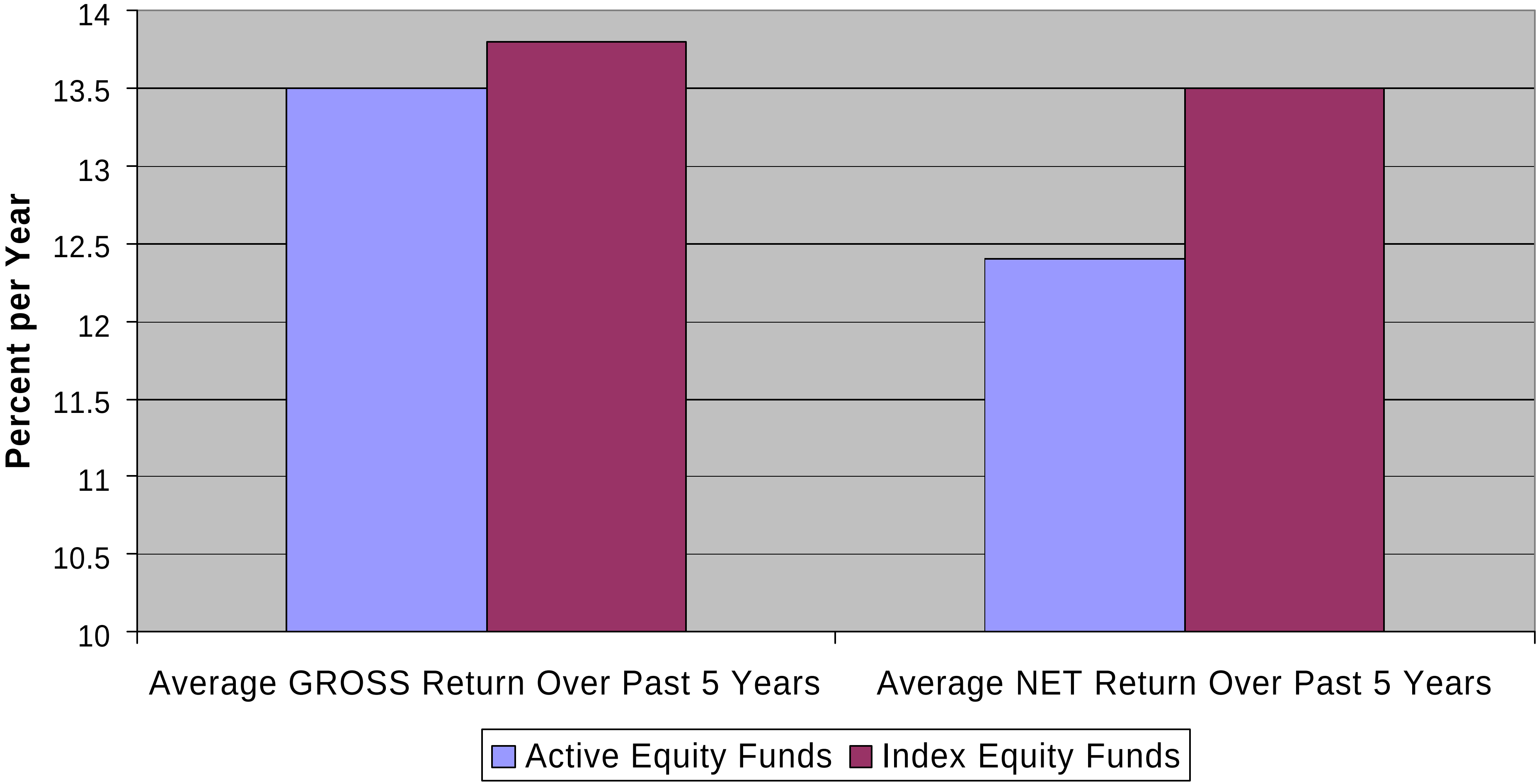
Interpretation

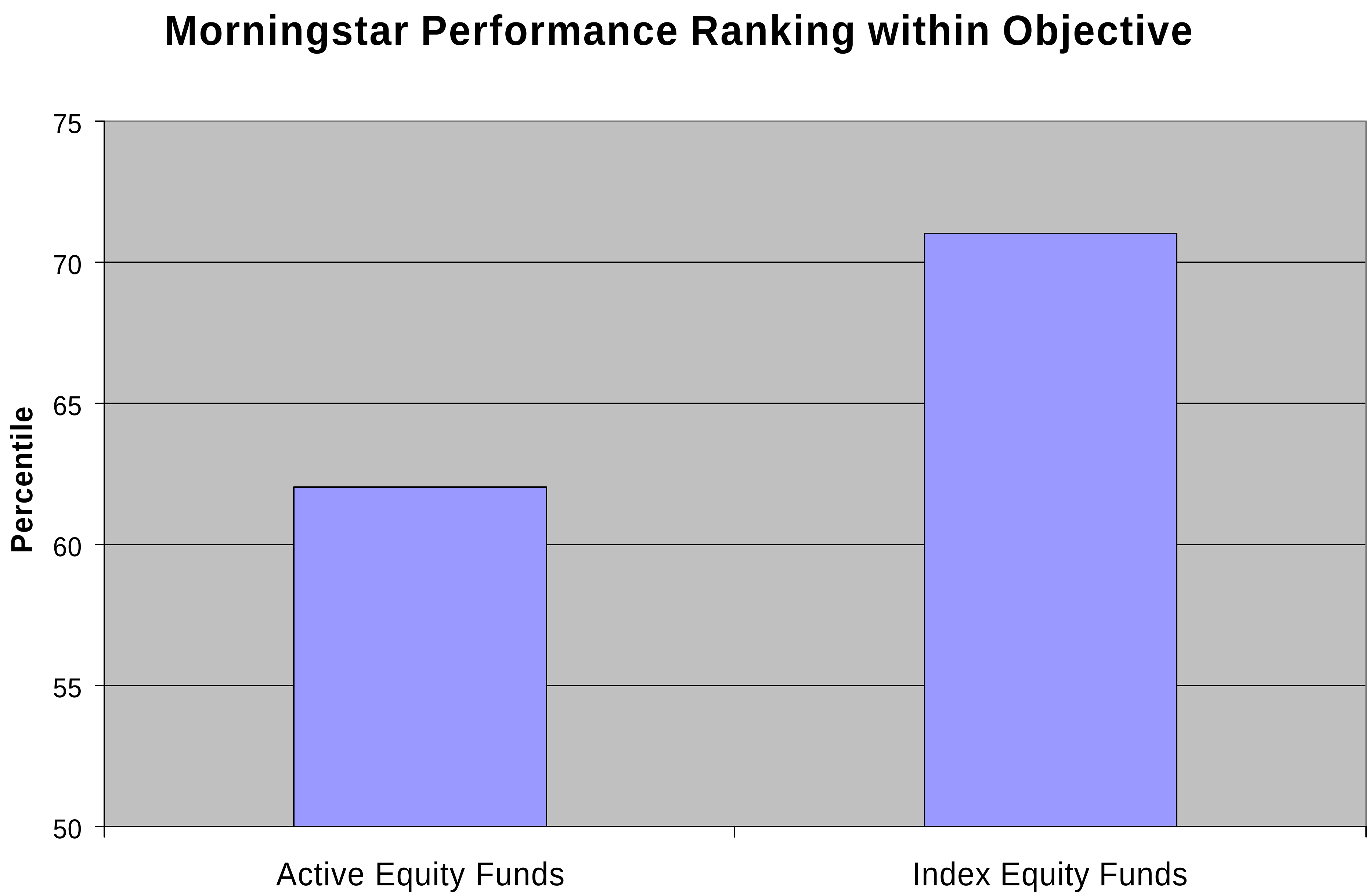
Two Possibilities

1. As number of options increases, each investor more likely to spread assets over greater number of funds
2. Each investor concentrates assets in small number of funds; as increase number of options, likelihood of concentrating investment in any one fund decreases

Why do we care?

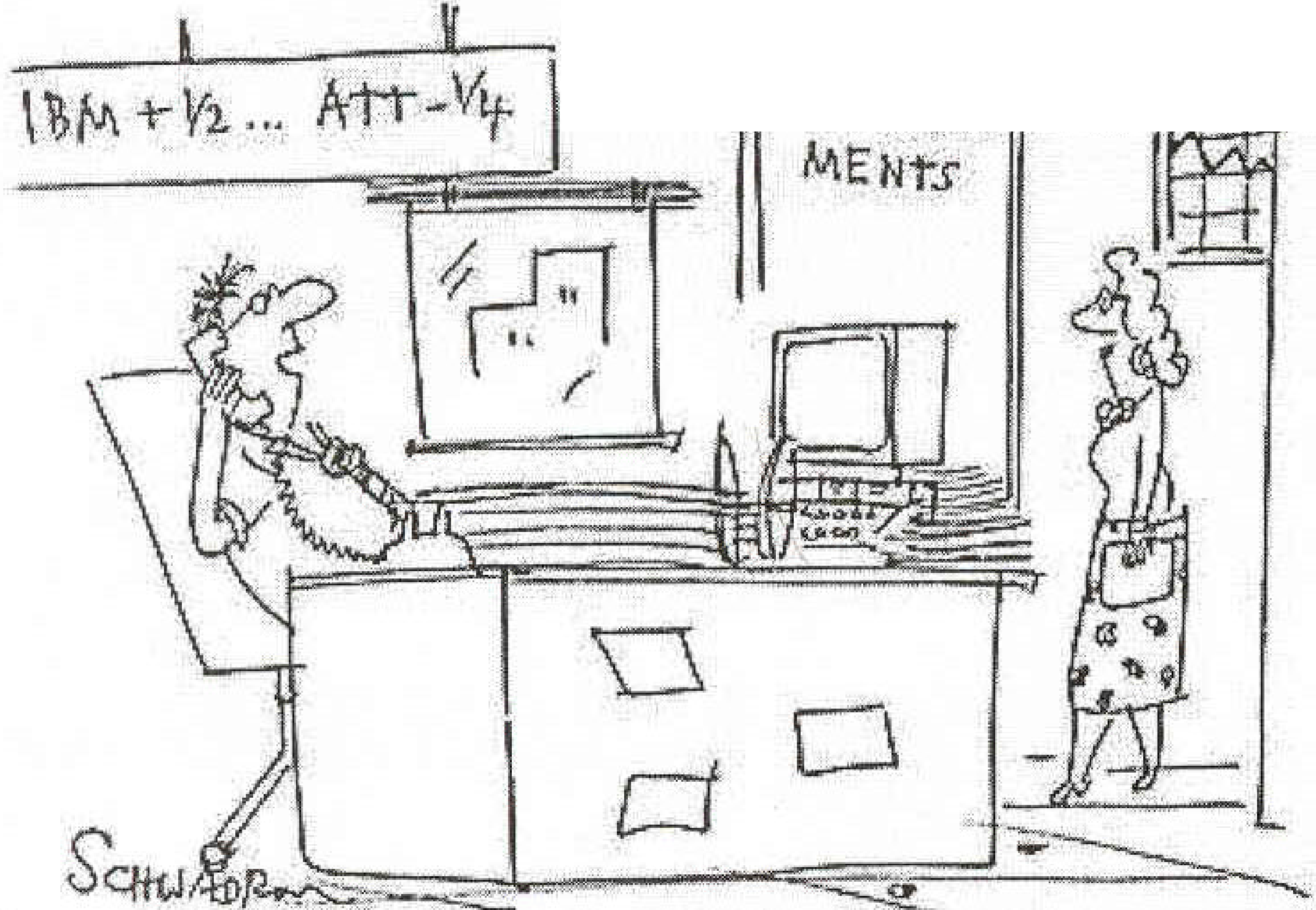
Performance of Equity Funds Offered in 401(k) Plans




Morningstar Performance Ranking within Objective
Percentile
75
70
65
60
55
50
Active Equity Funds
Index Equity Funds

Expenses, Performance, and Number of Options in Plan

- Regress firm-wide average expense ratio on equity investments (weighted by $) on number of equity options offered
  - Strong positive relation: Move from 1 equity fund to 5 funds is associated with a 22 b.p. increase in annual expenses
- Regress firm-wide average return on equity funds (weighted by $) on number of equity options offered in plan
  - Strong negative relation (reflects more high-expense funds as increase number of equity options)



"EDDIE, YOU'VE TRIED AGGRESSIVE GROWTH, MULTICAPS, SMALL CAPS, BLUE CHIPS... NOW MAYBE IT'S TIME TO TRY A SUPPORT GROUP FOR UNDERPERFORMING PORTFOLIOS?"

Implications

- Growth in number of actively managed options leads to smaller fraction of assets held in low-cost index funds
- Lack of superior performance from active fund management, combined with higher expenses, leads to lower retirement wealth
- Trend likely to continue as number of fund options continues to rise (marginal fund likely to be actively managed equity fund)

Next Steps

- Is there any evidence of "option confusion?"
  - Do people make worse allocation decisions (on a risk-return basis) when they face more options?
- What explains the firm's choice of investment options to offer?
  - Quality of options in plan
  - Selection of fund family or "cherry picking"
  - What motivates *change* in options?