Evidence on the returns to active strategies

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The value-weighted strategy is "the market"

Today we start to think about how to invest to earn high returns.

- You should also care about risk; we will get to that later.

Reminder: The value-weighted strategy is always our benchmark.

- Any other strategy is called an "active" strategy,
- "Beating the market" means beating the VW strategy.

Why?

- All investors together **must** earn a value-weighted return.
- Any investor can match this return, at minimal cost, by value-weighting the investments in their own portfolio.
- If anyone earns a higher return, this must be offset by a lower return to someone else **who also chose not to value-weight.**

Active strategies and the efficient markets hypothesis

- Are there strategies that predictably beat the market?
  The prior slide suggests that the null hypothesis should be “no.”
  We should require strong evidence to change our minds.
- To say it formally, our null is the efficient markets hypothesis:
  Prices should already reflect any information that is useful to investors, and public enough for us to see it in the first place.
- It is well-known that you cannot truly test this “hypothesis.”
  It just tells us what kind of evidence we should be looking for.
  We will be looking at such evidence for rest of the course.
- To be clear, I will never claim that we have proved any strategy is better than value-weighting.
  This is impossible to say objectively, for the same reason that the EMH is not testable.

The evidence we will look at this week

This week, we will consider two ideas on how to beat the market:

1. Delegate the decision to a professional fund manager.
2. Form a strategy yourself based on a simple thesis.

Our approach will be to backtest these ideas.

- Define precisely how we would have pursued the idea in the past, measure its returns, and compare with the market return.
- Of course, there's no guarantee the future will look like the past! But we will not have much to say about this issue.

To preview, we will generally conclude that you cannot beat the market following approach #1, and we will see why this makes sense.

But, surprisingly, #2 does generate some promising ideas. The rest of the course will be about exploring this evidence.

Mutual fund returns 1982-1991 (Malkiel, 1995)

This table compares the average annual returns from 1982 through 1991 of all mutual funds in existence each year with the returns for all funds that survived for 10 years.

	All Mutual Funds in Existence Each Year (%)	Funds in Existence in 1982 the Survived Through 1994 (%)	S&P 500 Index (%)	All Mutual Funds in Existence Each Year Gross of Expenses
Capital appreciation funds	16.32	18.08	17.52	17.49
Growth funds	15.81	17.89	17.52	16.81
Small company growth funds	13.46	14.03	17.52	14.53
Growth and income funds	15.97	16.41	17.52	16.89
Equity income funds	15.66	16.90	17.52	16.53
All general equity mutual funds	15.69	17.09	17.52	16.70

- Average fund underperformed the S&P 500 in each category.
- Note the importance of correcting for *survivorship bias.*

CAPM alpha for all mutual funds in Malkiel (1995)

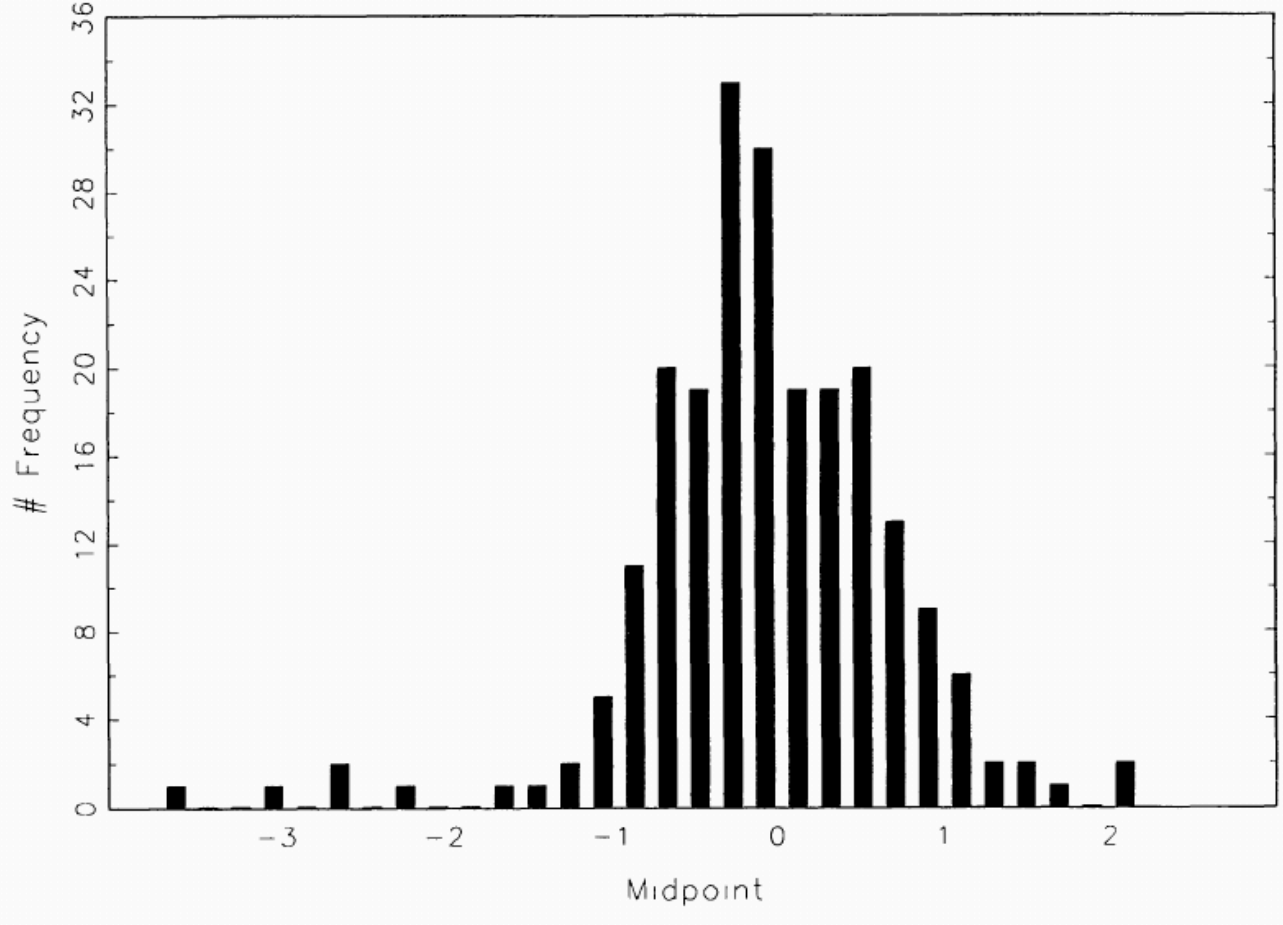
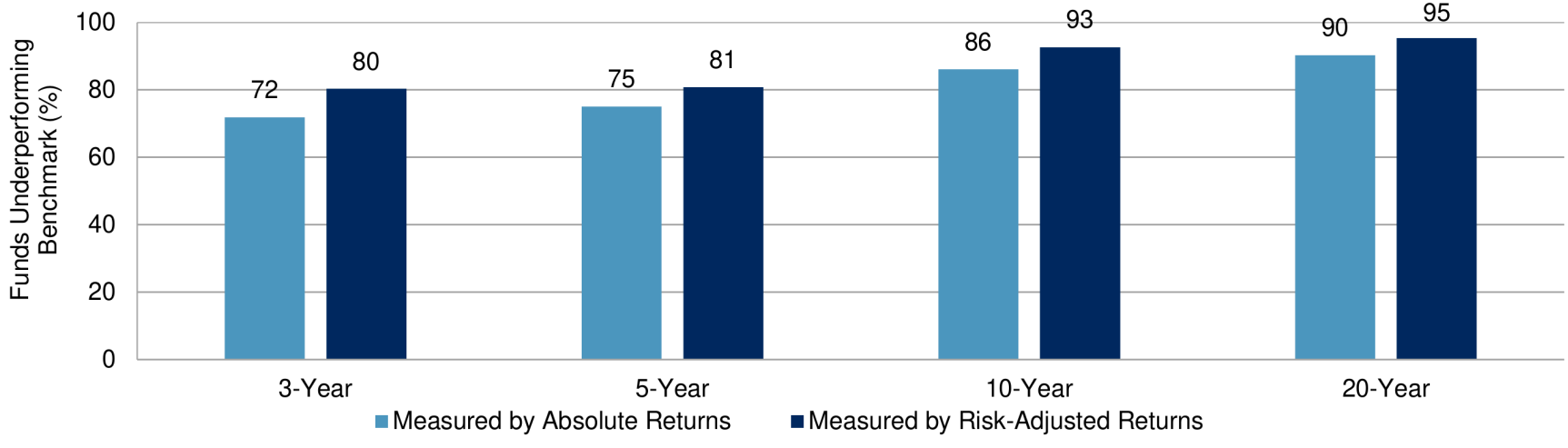


Figure 1. Estimates of Individual Mutual-Fund Alphas 1972 to 1991. The frequency distribution of estimated alphas for all equity mutual funds with 10-year continuous records.

More recent update

Exhibit 2: Percentage of All Domestic Equity Funds Underperforming the S&P Composite 1500 on an Absolute and Risk-Adjusted Basis



Source: S&P Dow Jones Indices LLC. Data as of Dec. 31, 2021. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

(click for an even more recent update)

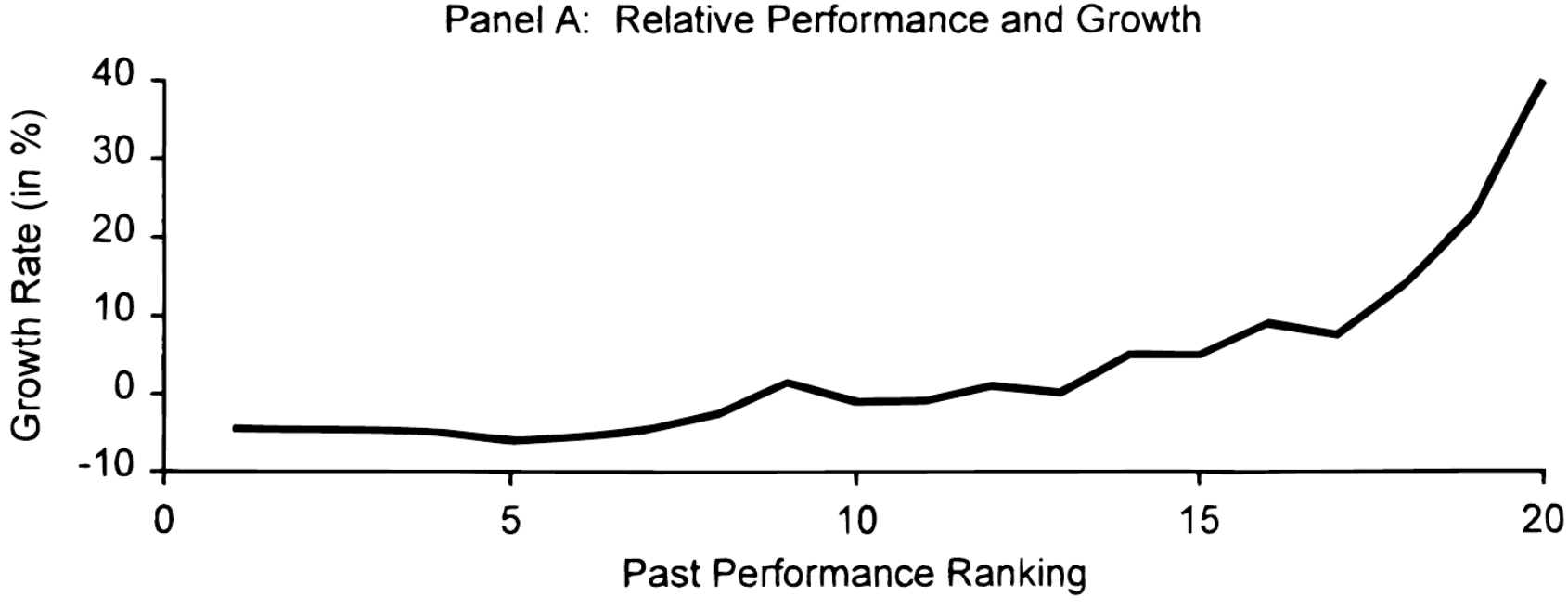
Interpreting the evidence

In fact, the prior evidence should not be surprising:
There are clear limits on the performance of the average fund.

- All investors collectively hold a value-weighted portfolio.
- A fund can only outperform that portfolio if some other investors underperform it by an equal amount.
- The mutual fund industry as a whole could only outperform by consistently taking money from some other investor class. This does not seem realistic to expect.

What about targeting only the funds with the best track record?

Performance-chasing



Indeed, funds that perform well attract inflows from investors.

(Note about the figure: Bigger number = better ranking)

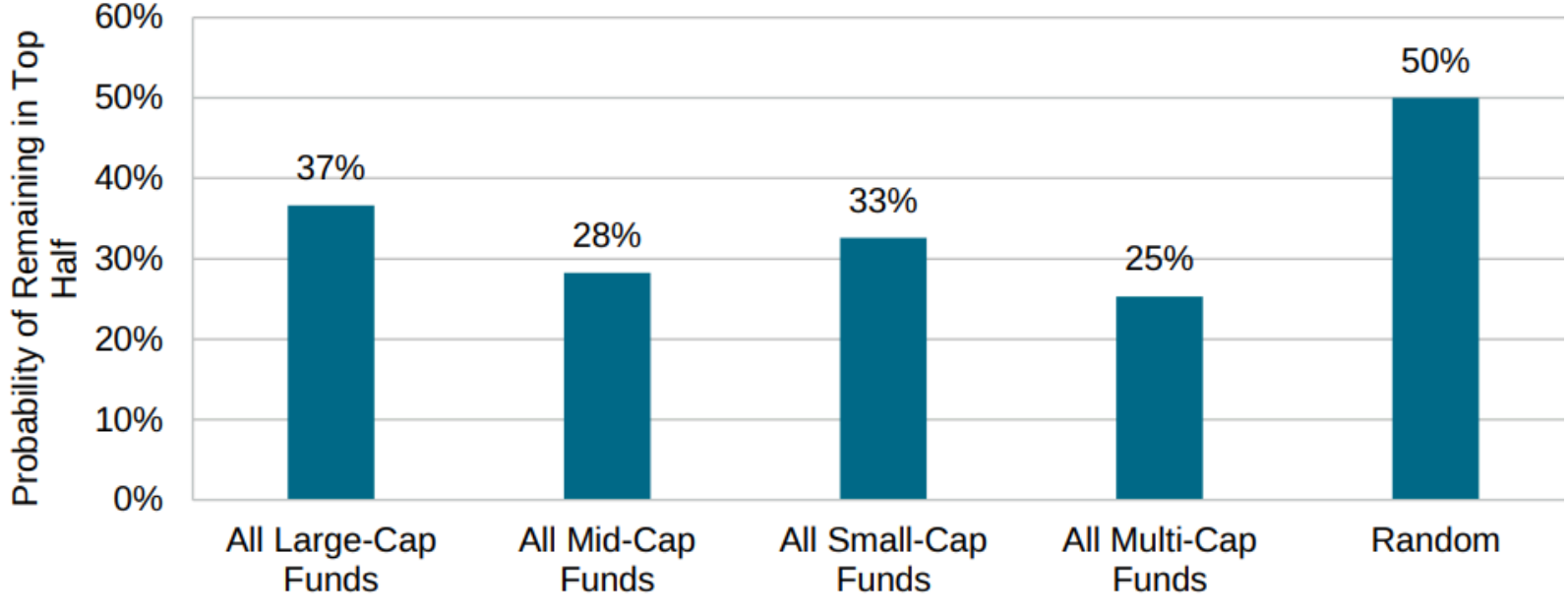
Performance-chasing assessment: Malkiel (1995)

In the 1970s, 65% of “winner” funds remained winners next year. But during the 1980s, this fell to only 52%.

	Top half next year	Bottom half next year
1970s		
Top half last year	65.1%	34.9%
Bottom half last year	35.5%	64.5%
1980s		
Top half last year	51.7%	48.3%
Bottom half last year	47.5%	52.5%

Our report for year-end 2022 finds little evidence of persistent active management success, despite considering a variety of metrics and lookback periods. Exhibit 1 illustrates the general point, using 10 years of return data for U.S. equity managers.

Exhibit 1: Top-Half Funds in Years 1-5 Did Not Repeat in Years 6-10



Source: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. Chart is provided for illustrative purposes. Past performance is no guarantee of future results.

Two interpretations of this evidence

The cynical view:

- The stock market is mostly efficient, even for professionals.
- Active equity funds simply should not exist.

The sympathetic view:

- Some managers do have skill in beating benchmarks, and investors are correct to chase that performance.
- But, these managers cannot scale up their ability forever.
- Investors flood into a fund until its performance looks unremarkable, net of fees.
- The true measure of manager skill is the size of the fund.

Investor implications

However you interpret the evidence, the implication for investors is:

- The average mutual fund will not beat an index strategy.
- Some will, *but you cannot invest in them ahead of time:*
  Either their good results were completely unpredictable,
  or the fund will grow to the point it can't repeat them,
  or the fund might not accept your money at all.

There are two reasonable ways to respond:

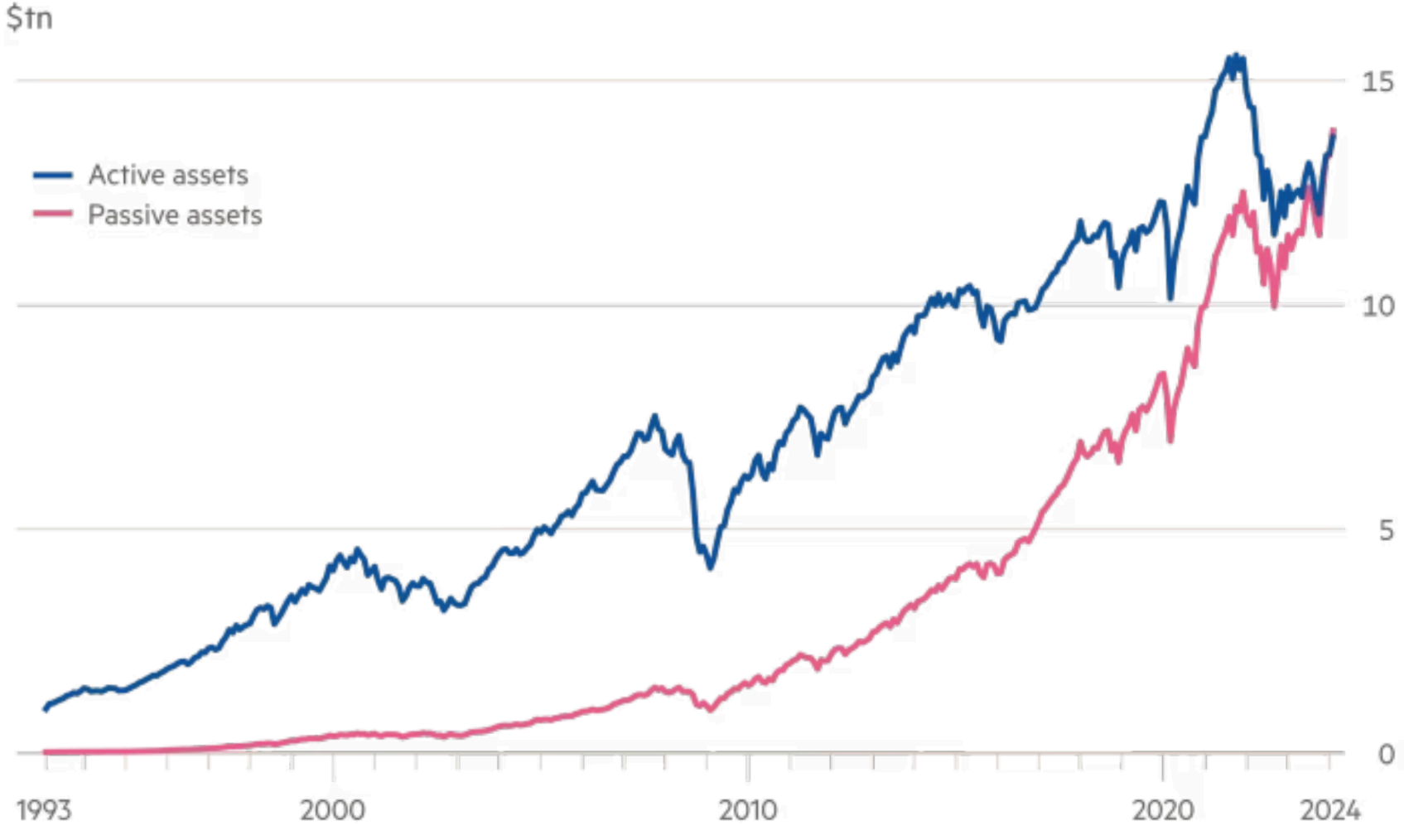
- Just pursue a value-weighted strategy, as cheaply as possible.
  We will say a few words about this next.
- Seek strategies, not managers, that have beaten the market in the past. Surprisingly, this is not so hard to do!
  We will spend the rest of the course thinking carefully about what this evidence means.

The growth of passive investing

- Analysts and commentators have long noticed the poor average performance of professional mutual fund managers.
- Paul Samuelson called for a low-cost index fund in 1974.
- 1975-1976: John Bogle founded Vanguard, launched its S&P 500 index fund, and began selling directly to investors.
- The idea seemed controversial or ridiculous to many at the time:

> *I can't believe that the great mass of investors are going to be satisfied with an ultimate goal of just achieving average returns on their funds.*
> *Ned Johnson (Chairman of Fidelity), 1976*

Historical fund assets: active vs passive



Source: Morningstar

- As we saw before, there is no obvious way to choose a fund manager who will beat the market, before they do it.
- What if you just followed a simple strategy by yourself?
- You might think you can’t do any better than the funds. After all, they are run by professionals with more experience.
- But surprisingly, there are in fact very simple and popular strategies that have earned returns above the market return. We will look at some of the best-known examples today.
- However, this evidence is not necesesarily enough to conclude that these strategies are better than passive investing. The rest of the course will be about considering this question in more detail.

Two broad categories of investment strategy

Value investing: Buy investments that are cheap compared to some “fundamental” or “intrinsic” value. Sell those that are overvalued.

- Assume that you are unusually good at estimating this value.
- Also assume that prices move towards fundamental value during your investment horizon; or else, plan to hold indefinitely.
- Famously advocated by Benjamin Graham and Warren Buffett.
- Graham originally called for careful valuation of individual stocks.
  But he evolved to a simpler multiples-type approach (next slide).

Technical analysis: Trading based only on patterns in prices, without regard to the characteristics of the companies behind them.

- Most prominent example: Momentum trading.

A conversation with Benjamin Graham, 1976

Q: In selecting the common stock portfolio, do you advise careful study of and selectivity among individual issues?

In general, no. I am no longer an advocate of elaborate techniques of security analysis in order to find superior value opportunities. ... This was a rewarding activity, say, 40 years ago, when our textbook was first published; but the situation has changed a good deal since then. ... To that very limited extent I'm on the side of the "efficient market" school of thought now generally accepted by the professors.

Q: What general approach to portfolio formation do you advocate?

Essentially, a highly simplified one that applies a single criterion or perhaps two criteria to the price ... and that relies for its results on the performance of the portfolio as a whole – i.e., on the group results – rather than on the expectations for individual issues.

Investment styles: Size, value, and momentum

A “style” is a simple characteristic of an investment, that is used to form broad portfolios to (hopefully) beat the market.

In the stock market, the best-known styles are:

- Size: Another name for market capitalization.
- Value: A valuation ratio involving the stock price.
- Momentum: The stock’s return over recent months.

Today we will look at average returns based on these styles, using evidence from the US stock market from 1926 to the present.

(Later in the course we will use “factor” as another name for “style”.)

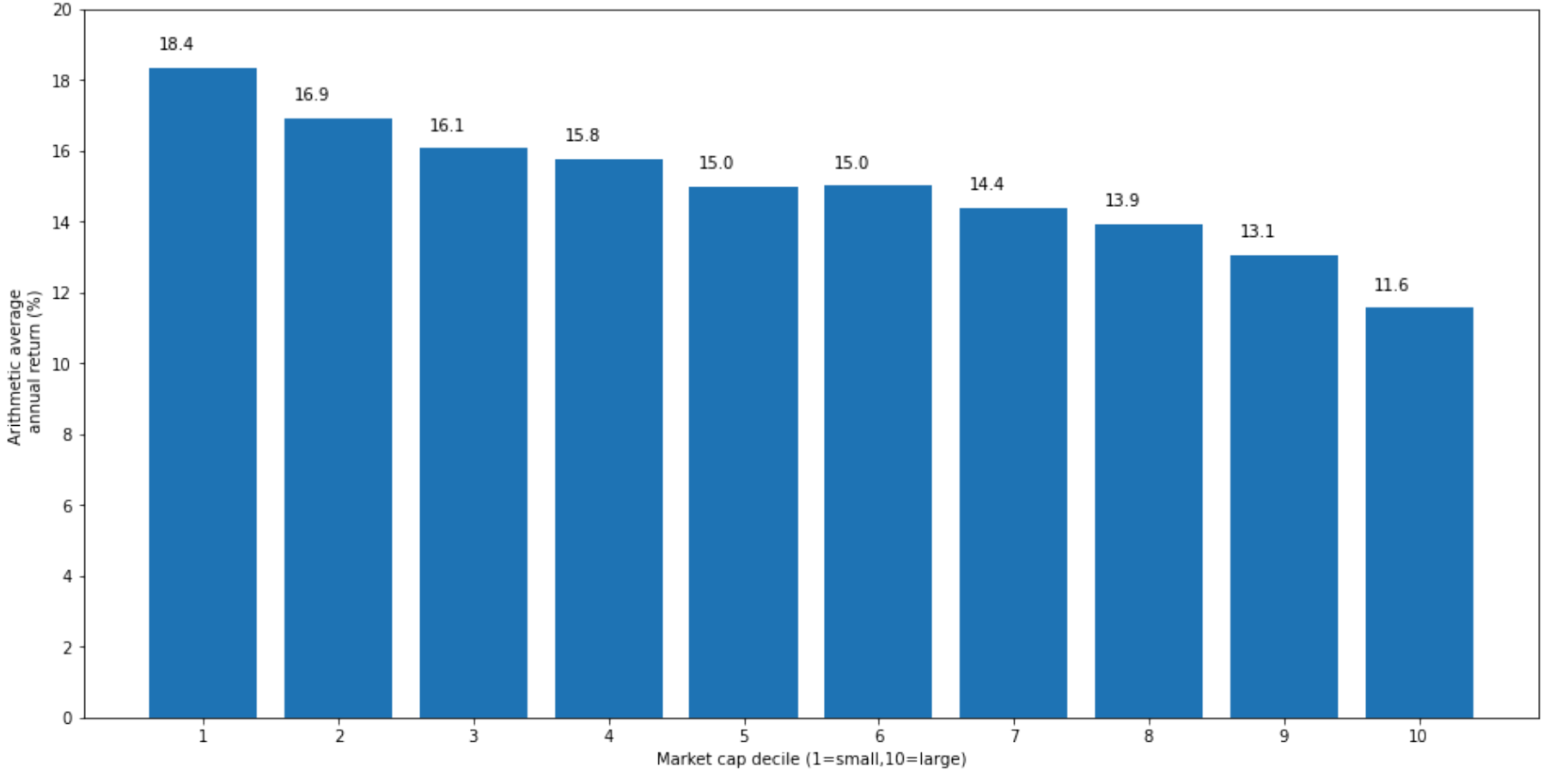
Studying investment styles with sorted portfolios

1. Give a precise definition of the style you are studying. Examples:
    - **Size:** The market capitalization of the stock's issuer.
    - **Value:** The issuer's book-to-market ratio.
    - **Momentum:** The price increase from month t – 13 to t – 1.

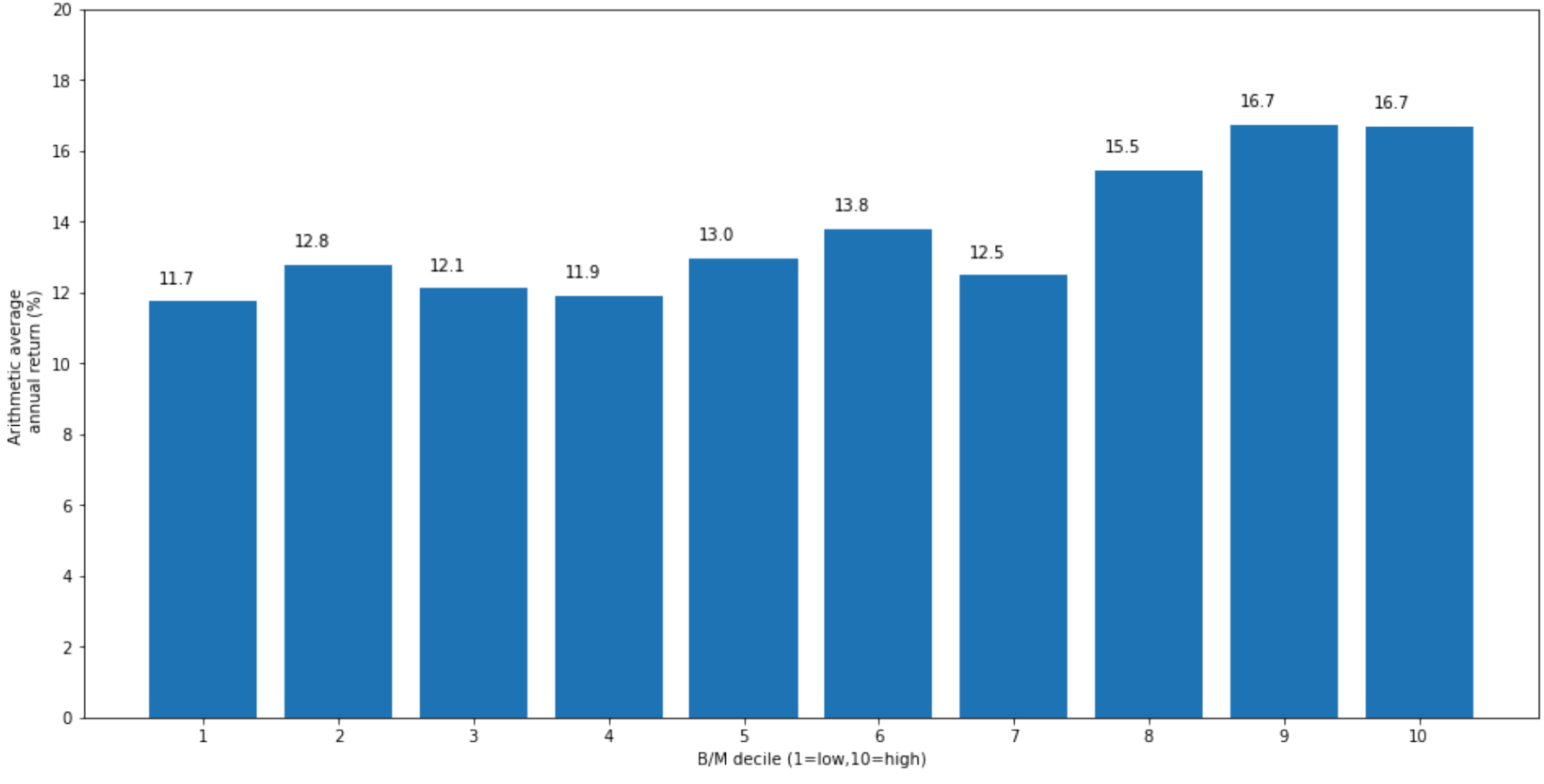
(Definitions vary in practice, but we will focus on those listed above.)

2. Backtest the performance of portfolios sorted on this basis:
- At the start of each past year in your data, sort stocks into different portfolios based on the characteristic you are studying.
- Calculate each portfolio's value-weighted return for that year.
- Repeat for each year in the data.
3. Compare each portfolio's returns with the market.

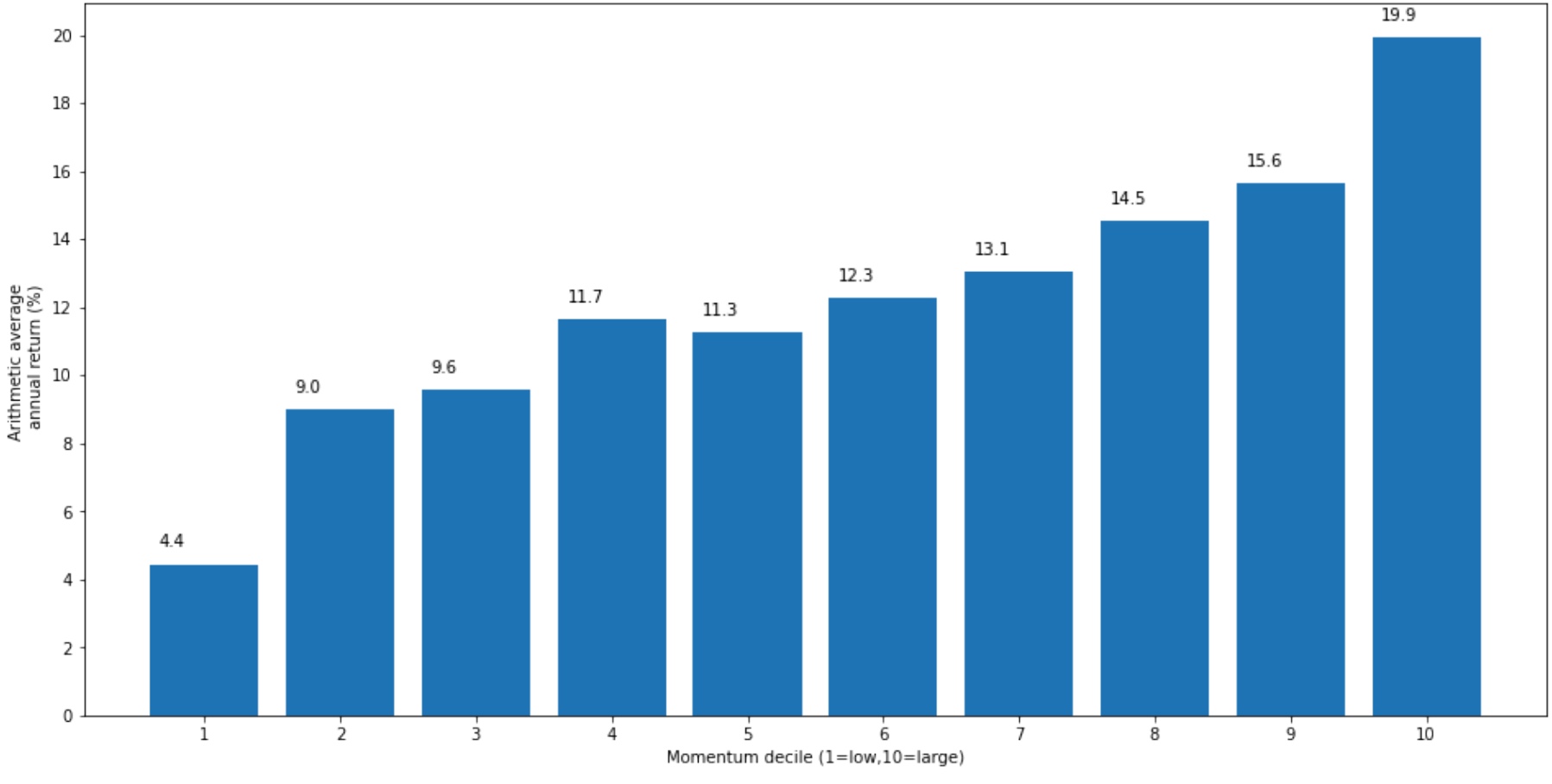
Average returns across portfolios formed on size



Average returns across portfolios formed on value



Average returns across portfolios formed on momentum



What is missing from this evidence?

- Past performance does not guarantee future performance.
    - As we mentioned earlier, we can't do much about this.
- Transaction costs may be quite large.
    - We will spend some time on this issue, but not much.
    - In general, it doesn't change today's conclusions: Style-based strategies have outperformed the market.
- **Risk**: We have only looked at long-run averages (90+ years).
    - For any one person, there is no guarantee what the average will be within their investment horizon, or what kind of short-term risk they might have to accept to pursue these strategies.
    - How should we measure risk? How much risk is too much? These questions are our main focus after Midterm 1.

Comparison of average return and volatility across portfolios formed on size