Evidence on returns to active strategies

William Mann

EMORY
GOIZUETA BUSINESS SCHOOL

Backtesting an investment strategy

Make sure to use information that was actually available in real time.

Could motivate by imagining buying stocks based on *next* quarter's market capitalization.

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”.)

Backtesting a style-based investment strategy

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.

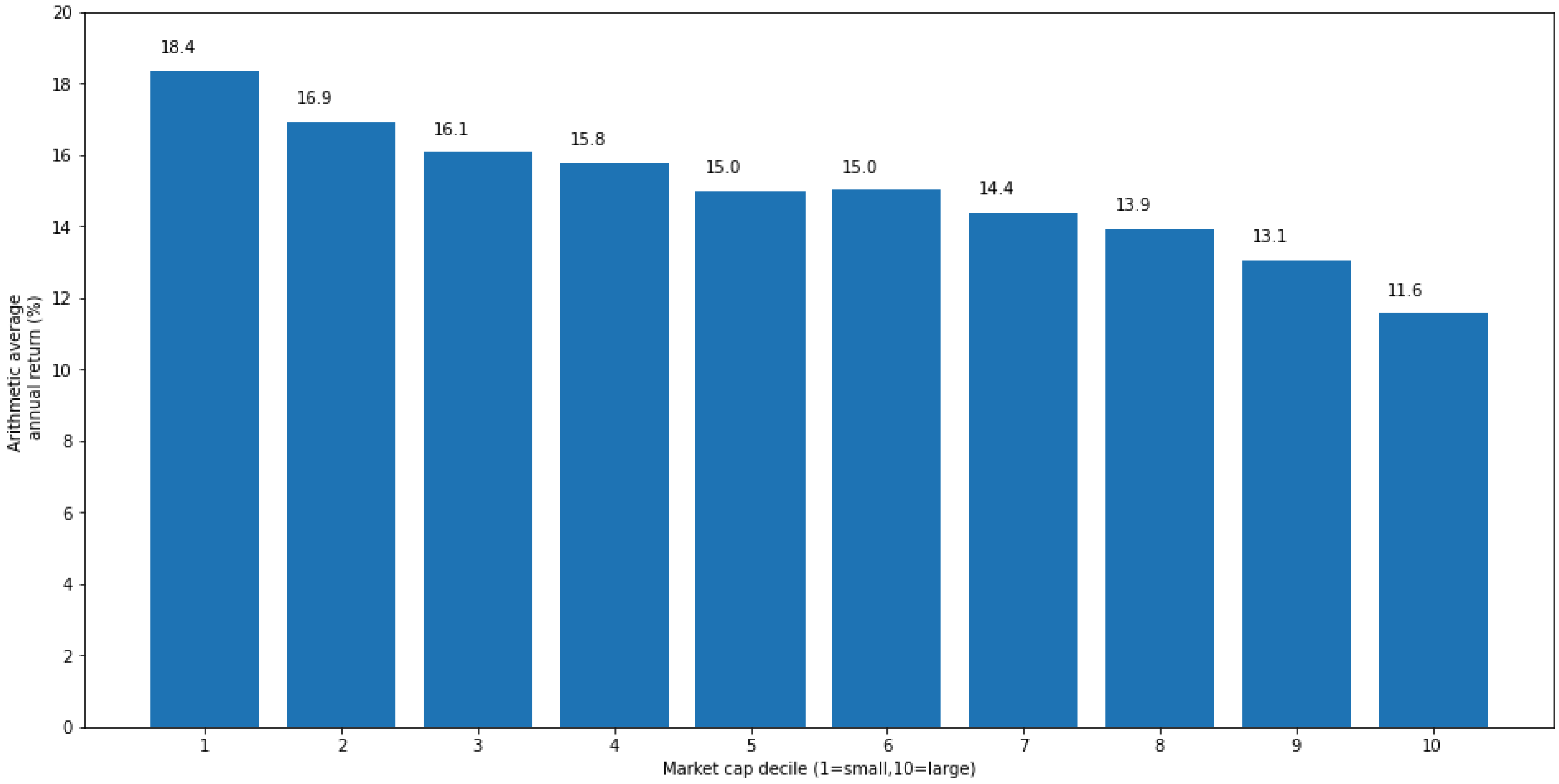
3. Compare each portfolio's returns with the market.

Average returns across portfolios formed on market cap

Compare textbook figure 11.4. The years are 1926-2021.

In [4]:
```
size_portfolios_figure
```

Out[4]:

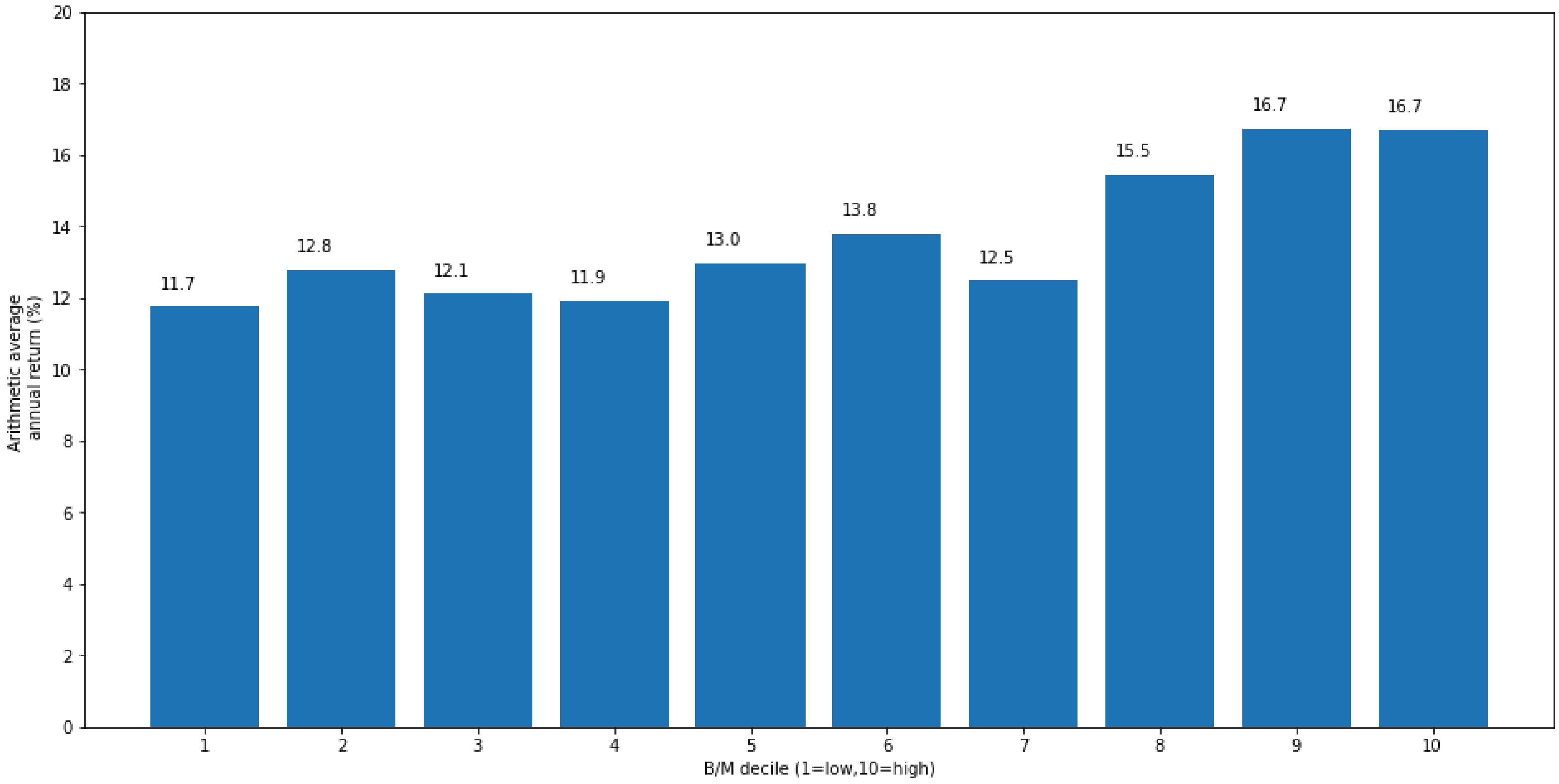


Average returns across portfolios formed on book-to-market

Compare textbook figure 11.5. The years are 1926-2021.

In [6]:
```
value_portfolios_figure
```

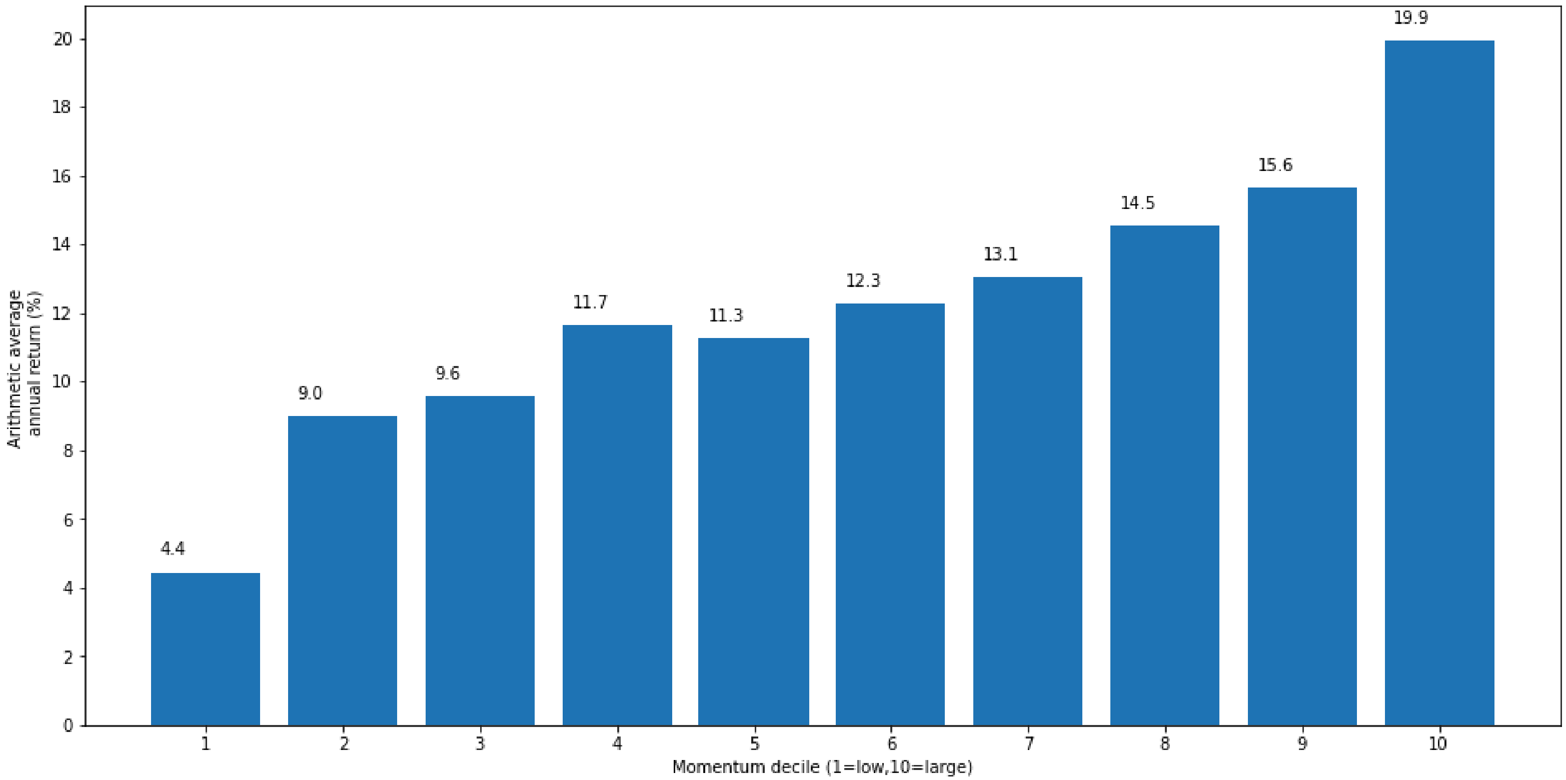
Out[6]:



Average returns across portfolios formed on momentum

In [8]:
```
momentum_portfolios_figure
```

Out[8]:



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

In [10]:
```
size_volatility_figure
```

Out[10]: