STYLIZED FACTS ON SECURITY RETURNS

adopted from Heinz Zimmermann, Elmar Mertens

AGENDA

We will look at how security returns behave . . .

. . . across **asset classes**

. . . compared with their **"risk"**

. . . once they are grouped into **baskets**

. . . in relation to the **macroeconomy**

. . . depending on **firm characteristics**

. . . with regard to **prior performance**

. . . when there is **new information**

. . . and what **investment managers** get out of them

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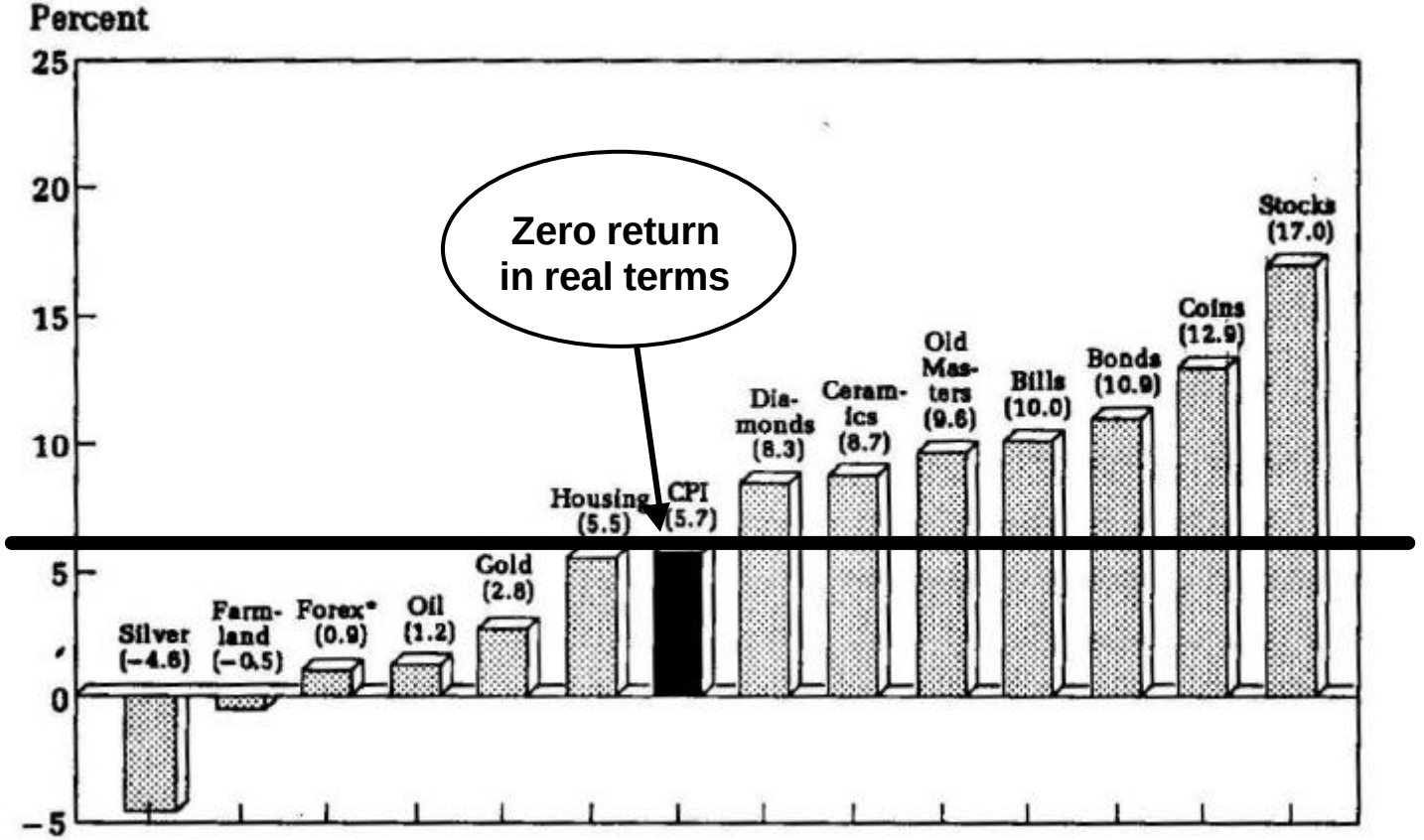
Historical returns on various asset classes differ considerably

AVERAGE RETURNS ON FINANCIAL AND PHYSICAL ASSETS

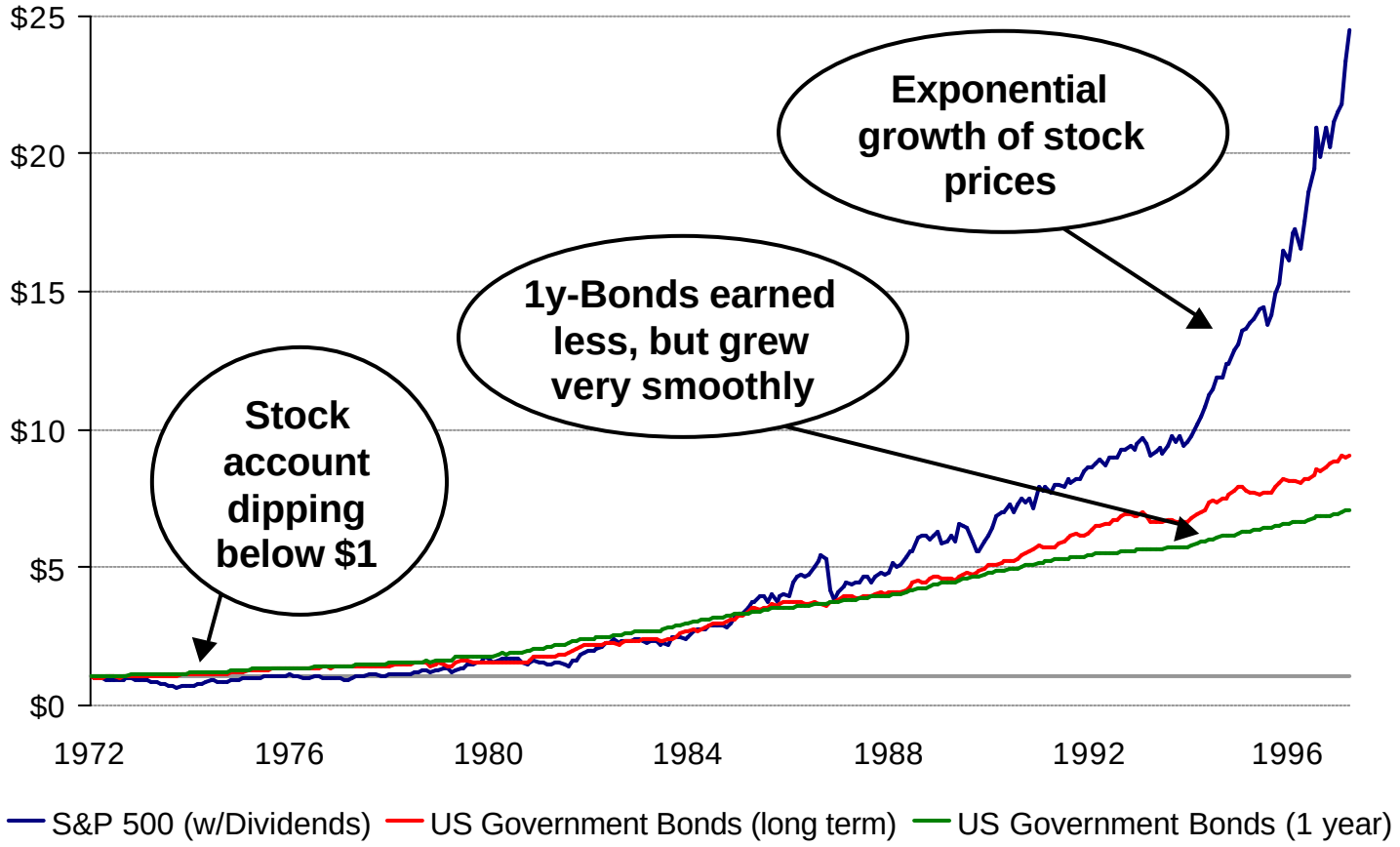
Percent p.a. in U$, average over the 1980s



Source: Malkiel (1996), p. 383

The long-term gains from the stock market have been astounding

TODAY'S VALUE OF 1$ INVESTED IN 1972
Including reinvestment of interests and dividends

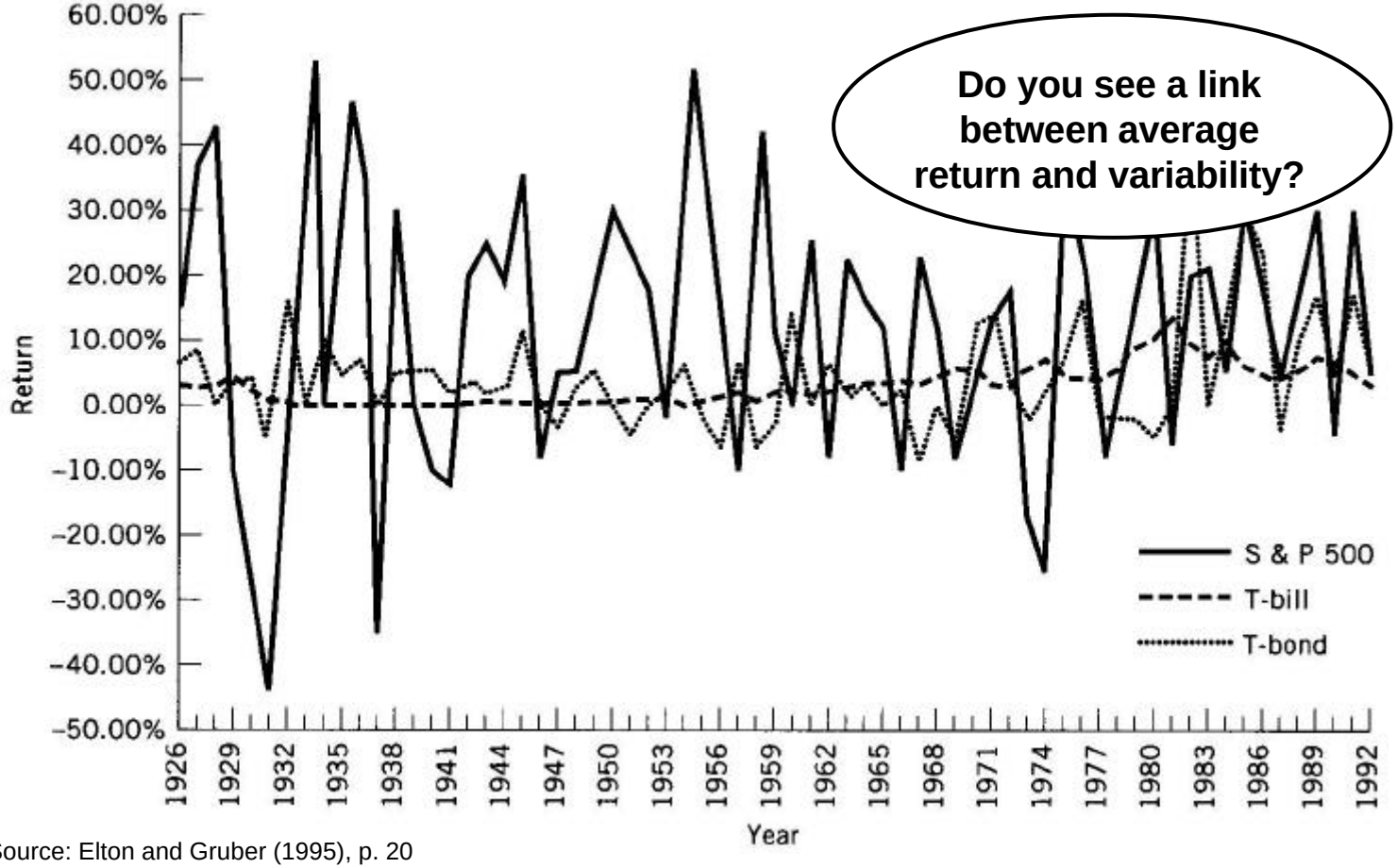


Source: Mertens, Data from Ibbotson Associates

The variability in returns differs, too

TYPICAL RETURNS ON U.S. STOCKS AND BONDS

Percent p.a.



Source: Elton and Gruber (1995), p. 20

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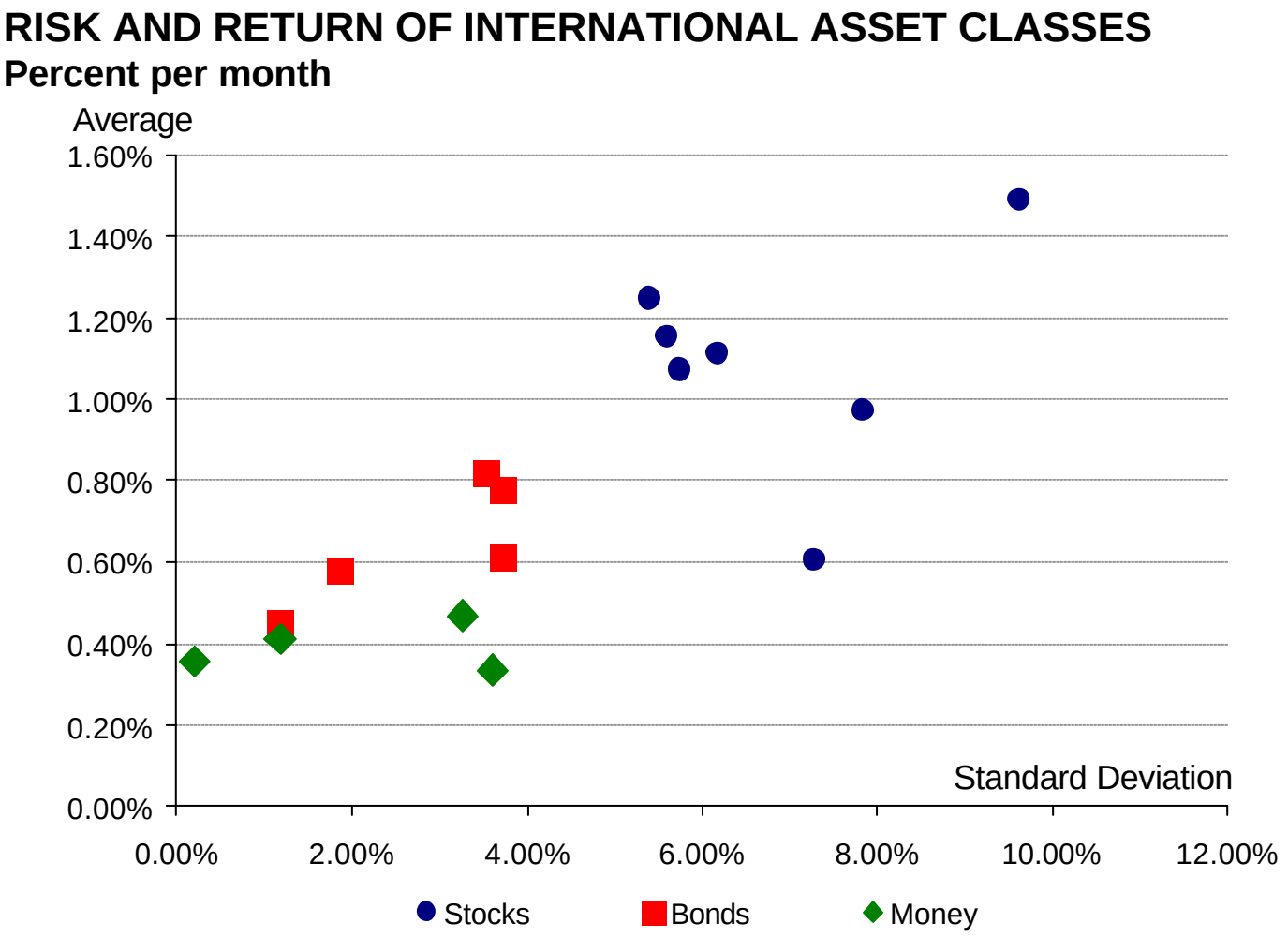
The relation between average return and dispersion is not straightforward



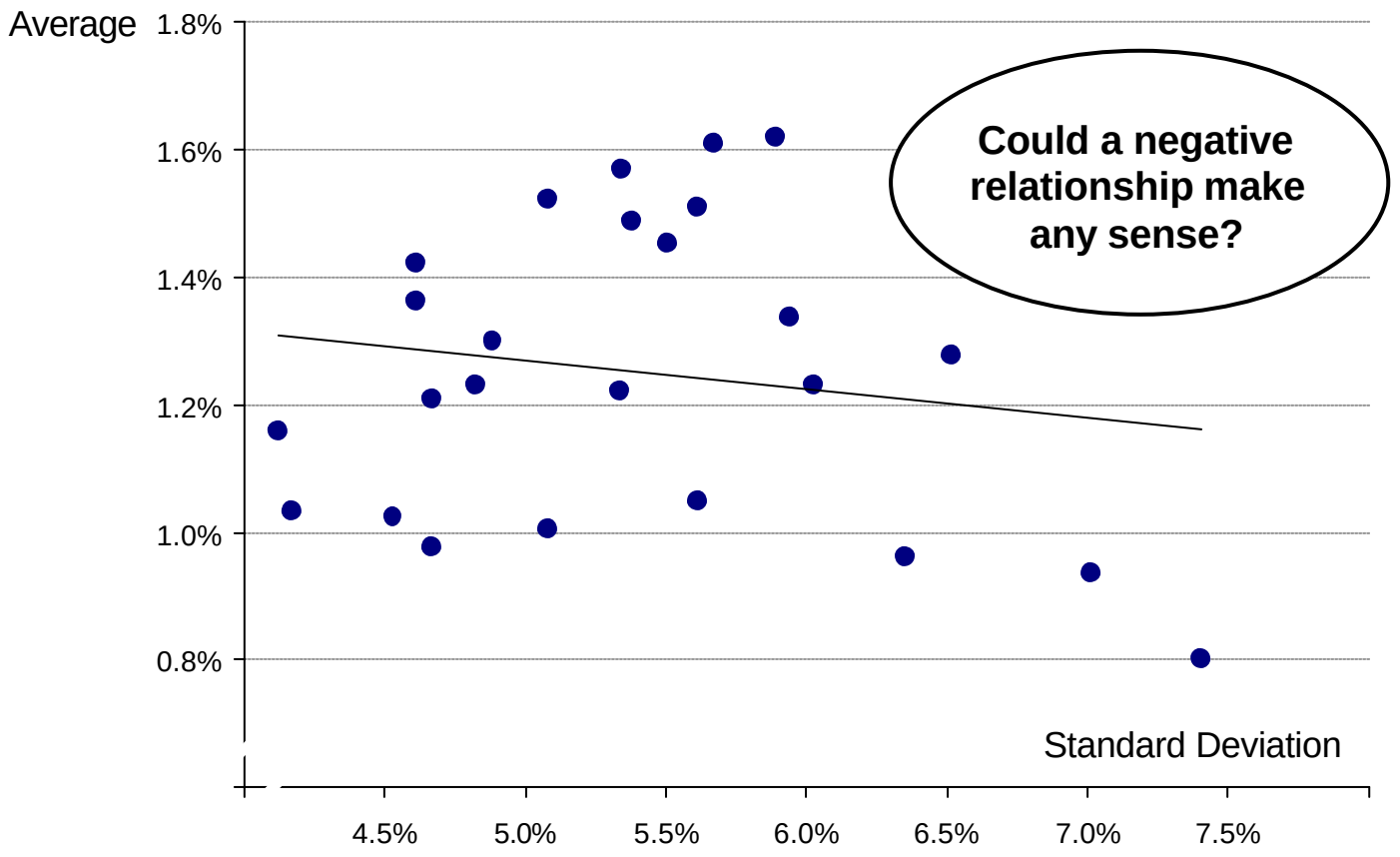
Source: Mertens, Data from Investment Consulting Group

For a single asset class, like stocks, there is almost no relationship

RISK AND RETURN OF SOME U.S. STOCK PORTFOLIOS

Percent per month

BACKUP



Source: Mertens, Data from Fama and French (1992)

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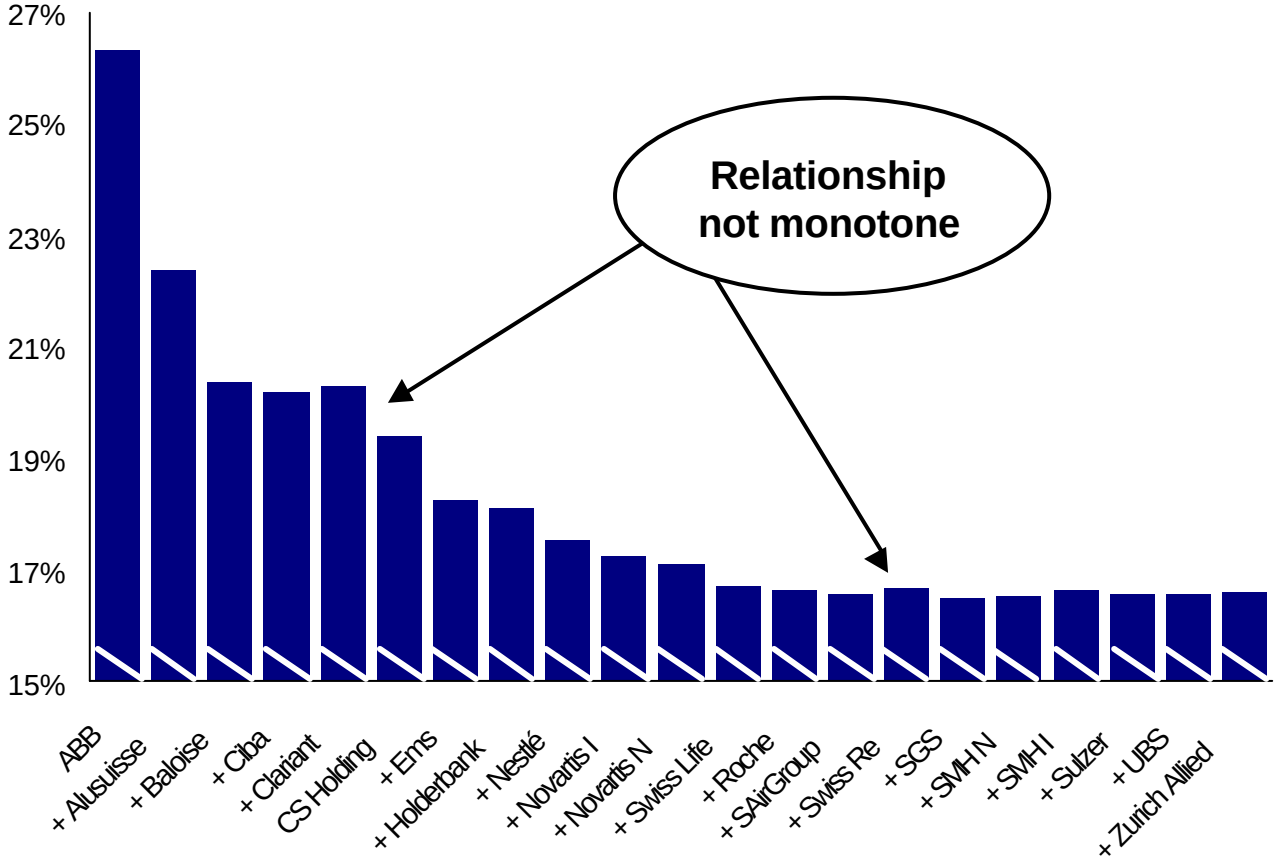
Even a naïve mix of just a few stocks reduces risk considerably

ADDING STOCKS IN ALPHABETIC ORDER TO A PORTFOLIO

Volatility of portfolio returns (dispersion around mean) in percent p.a.

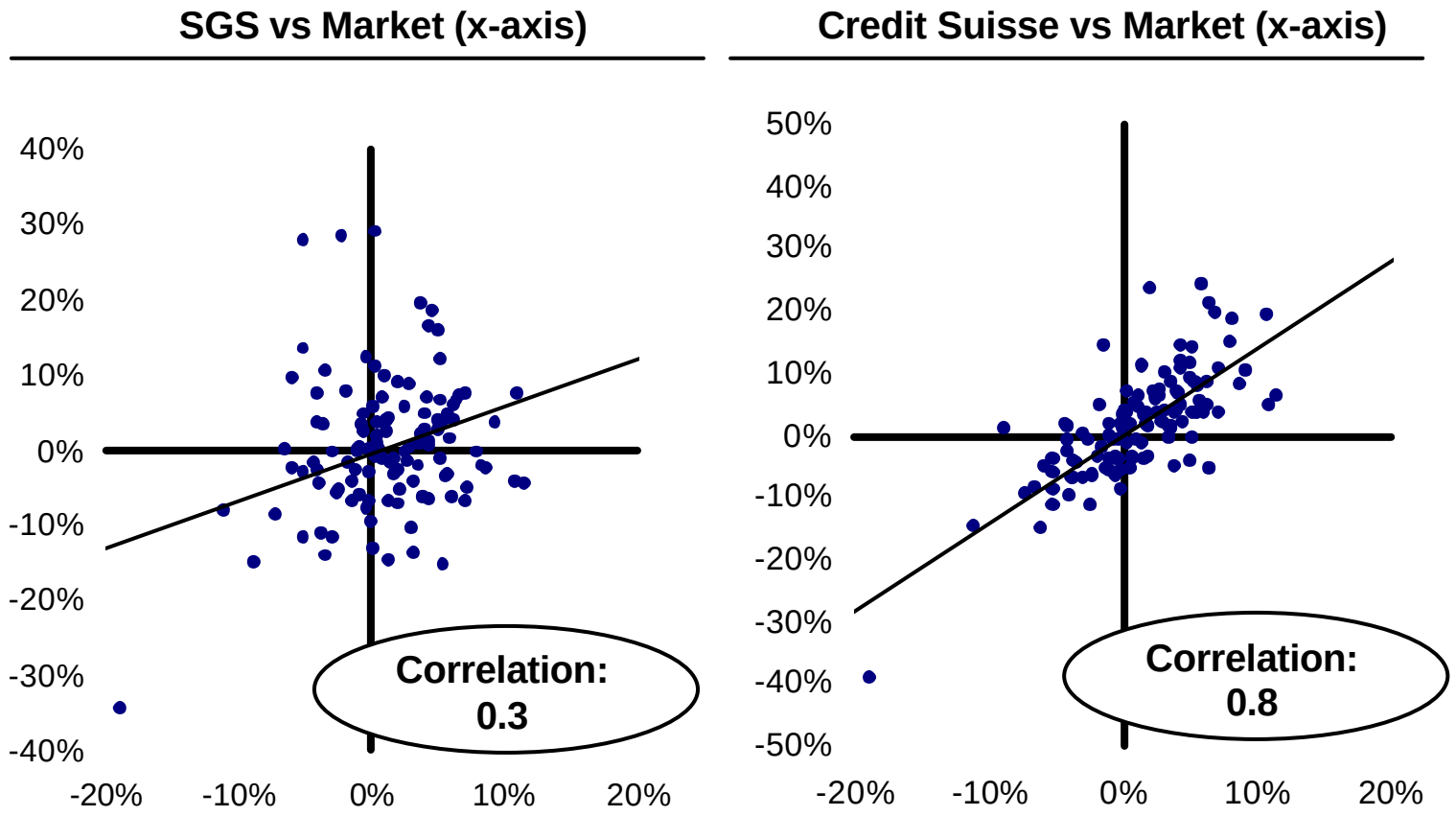


Source: Zimmermann

Some stocks move more, other less closely with the market

COMOVEMENT OF STOCKS WITH MARKET

Returns in percent per month



Source: Mertens

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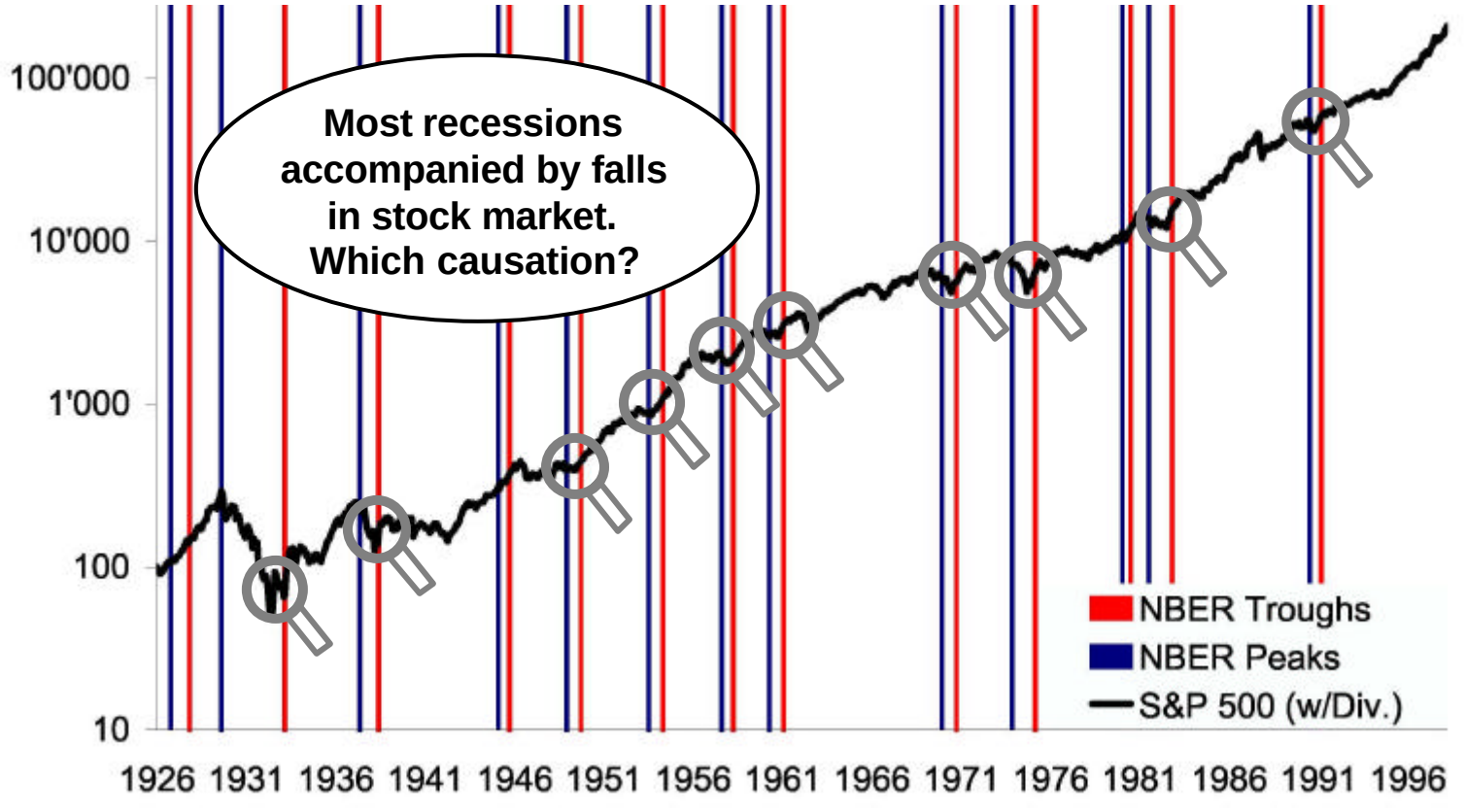
There is a well established link between business cycles and stock market returns

RECESSIONS AND THE U.S. STOCK MARKET SINCE 1926

Indexed S&P 500 (with dividends), logarithmic scale



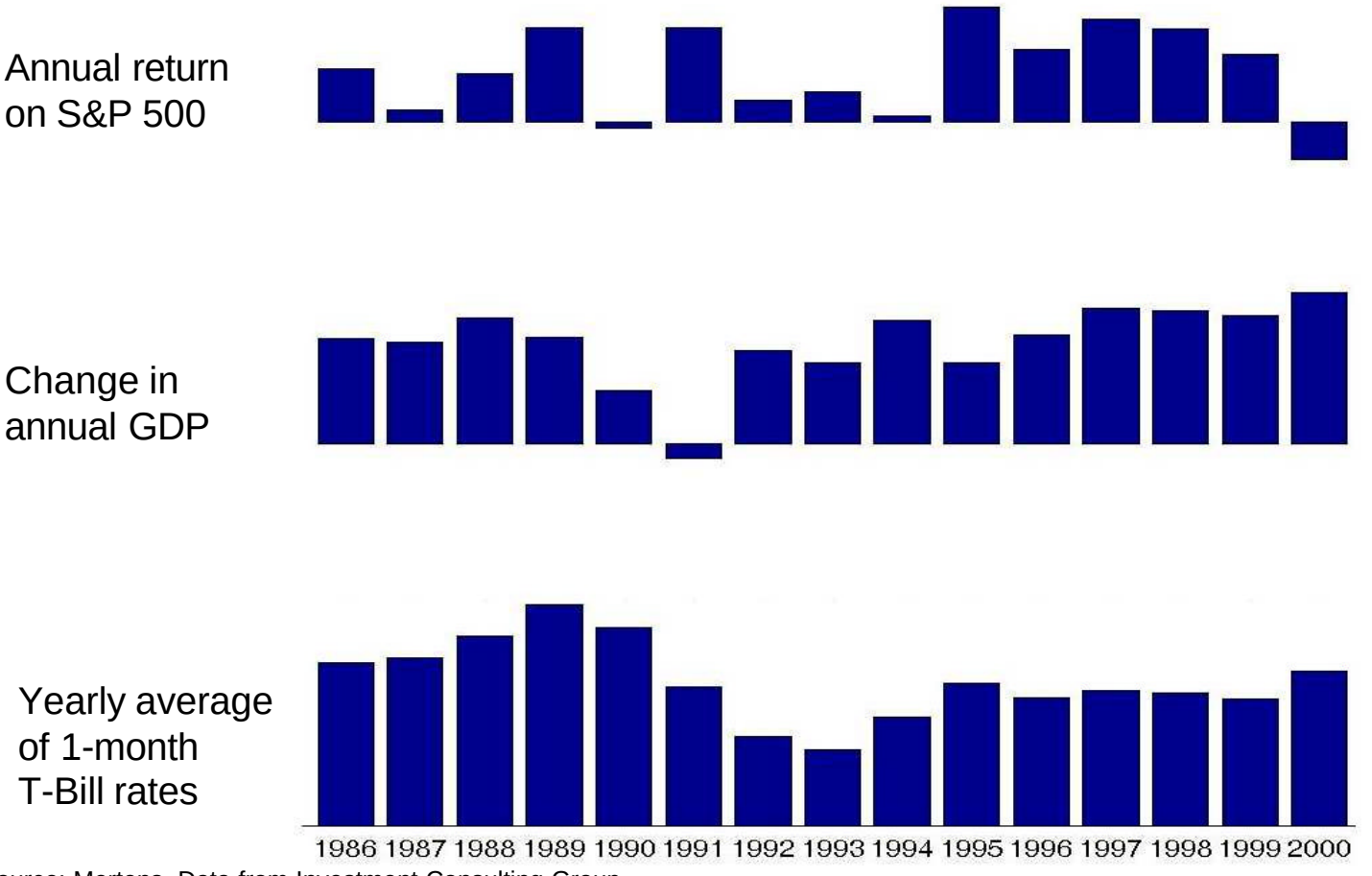
Source: Mertens, Data from NBER and Ibbotson Associates

The relation between stock market, GDP and short rates is not straightforward

U.S. STOCK MARKET AND THE MACROECONOMY

Patterns of yearly returns / changes (different scales)

BACKUP



Source: Mertens, Data from Investment Consulting Group

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TYPICAL FIRM CHARACTERISTICS

- Size
- Industry affiliation
- Accounting Ratios:
  - Price-Earnings
  - Book-to-Market
  - Price-to-Cash-Flow
  - Leverage ratio
  - . . .
- Location of Headquarters and the place of major share listing
- Type of securities issued (stock, preferred, bonds, derivatives)
- Type of activities: conglomerate, start-up etc.
- . . .

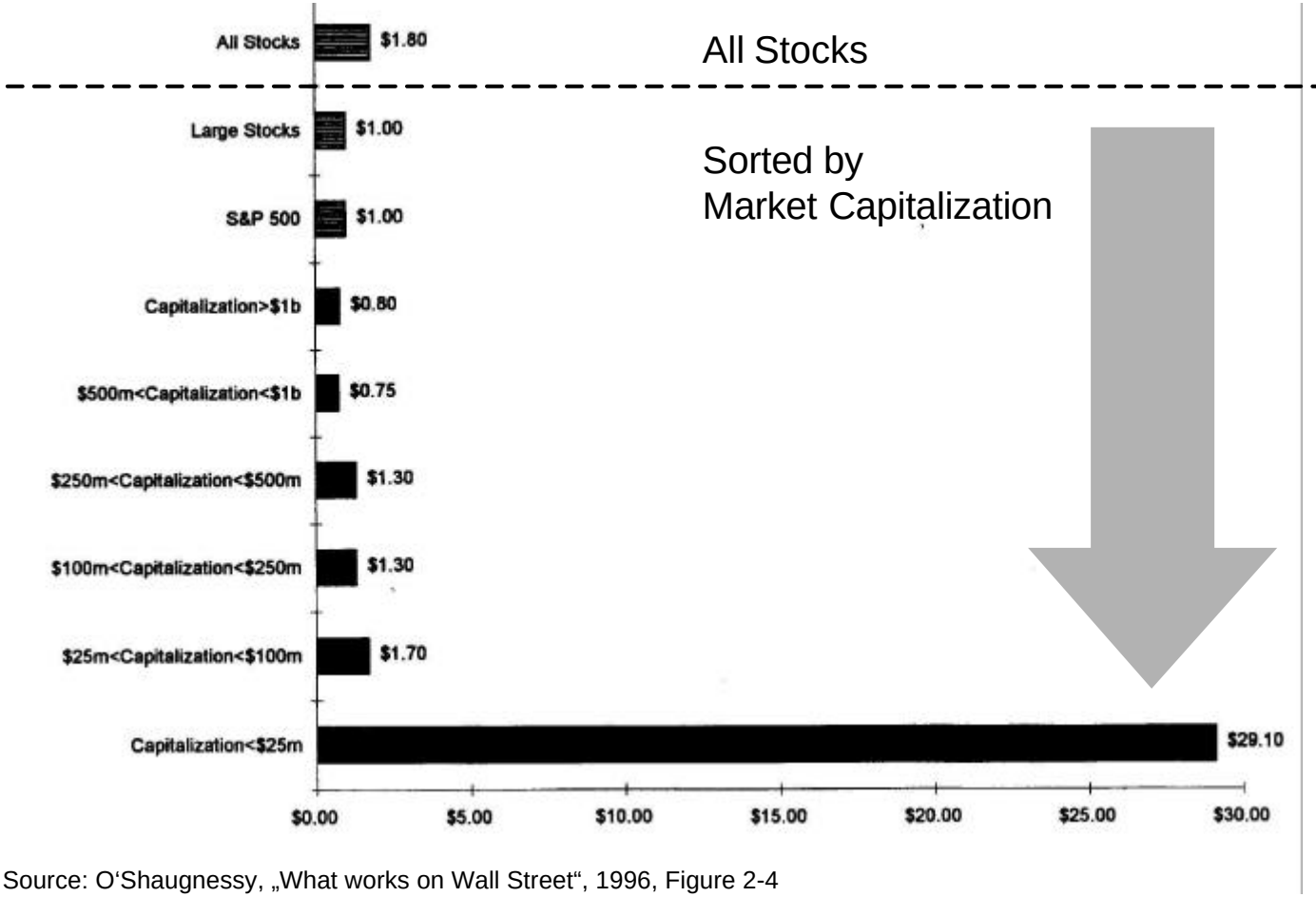
Accounting Ratios are supposed to convey growth expectations. Note: Most ratios are scaled prices

Source: Mertens

Small firms have higher returns, but the most extraordinary results apply only to „micro-caps“

RETURNS AND FIRM SIZE

Million U$, value of $10,000 invested from 1952-1994



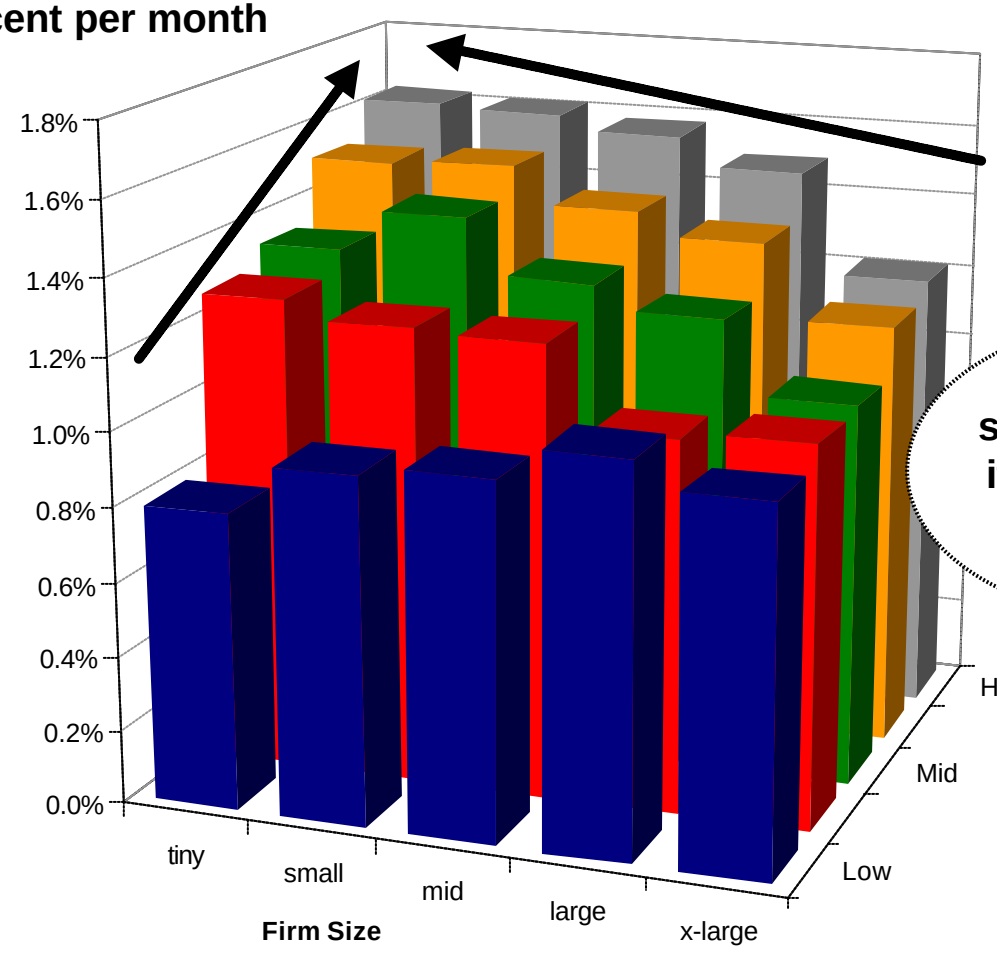
Source: O‘Shaugnessy, „What works on Wall Street“, 1996, Figure 2-4

Small „value“ companies have higher returns

AVERAGE RETURNS ON U.S. STOCKS DEPENDING ON SIZE AND B/M

Percent per month

BACKUP



High B/M is similar to low P/E, it means „value“. The opposite is „growth“

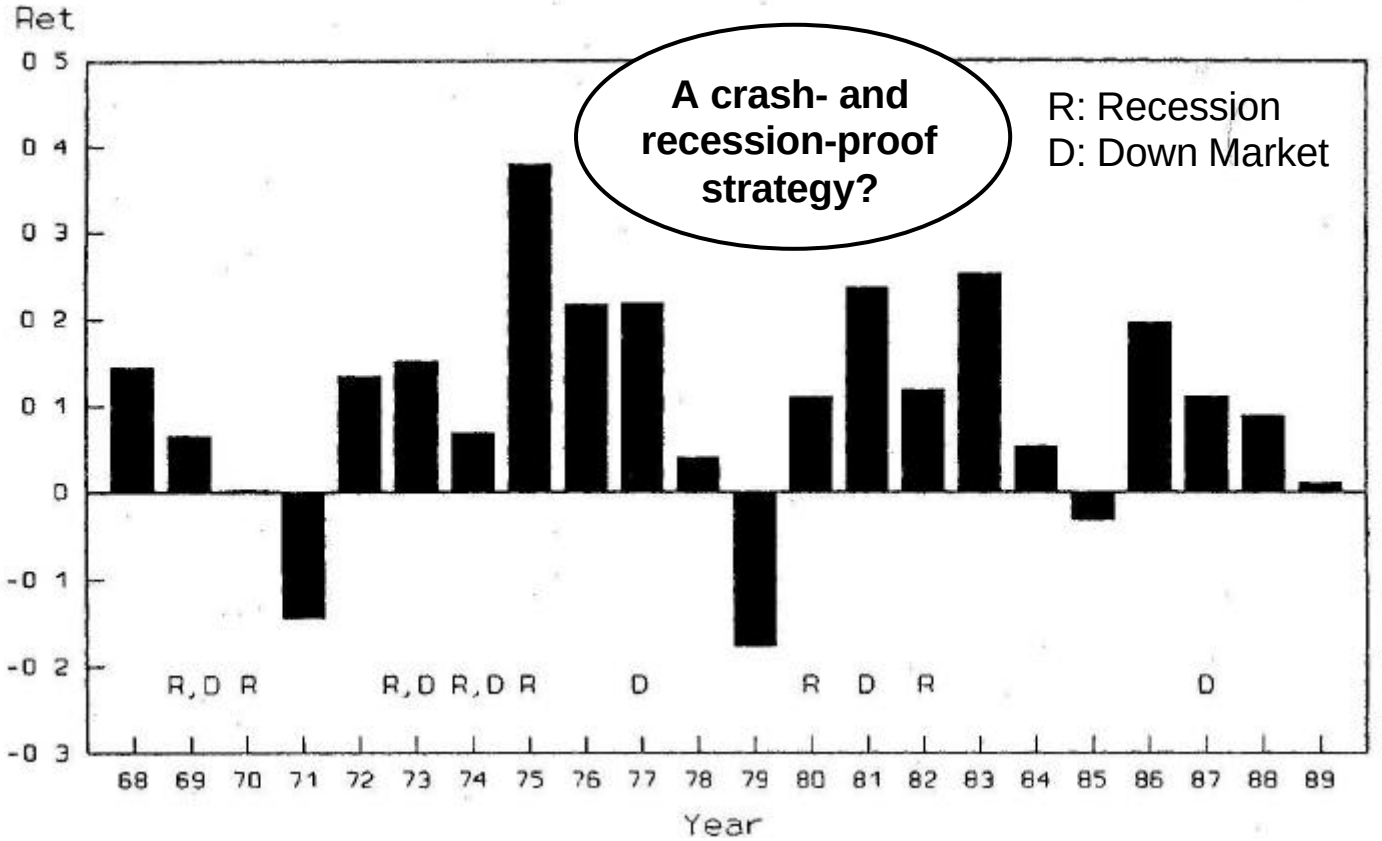
Source: Mertens, Data from Fama and French (1992)

For a long time, the performance of buying „value“ companies seemed very persistent

PORTFOLIO OF BUYING „VALUE“ AND SELLING „GROWTH“ ´68-´90

Percent p.a., U.S. Stocks

BACKUP



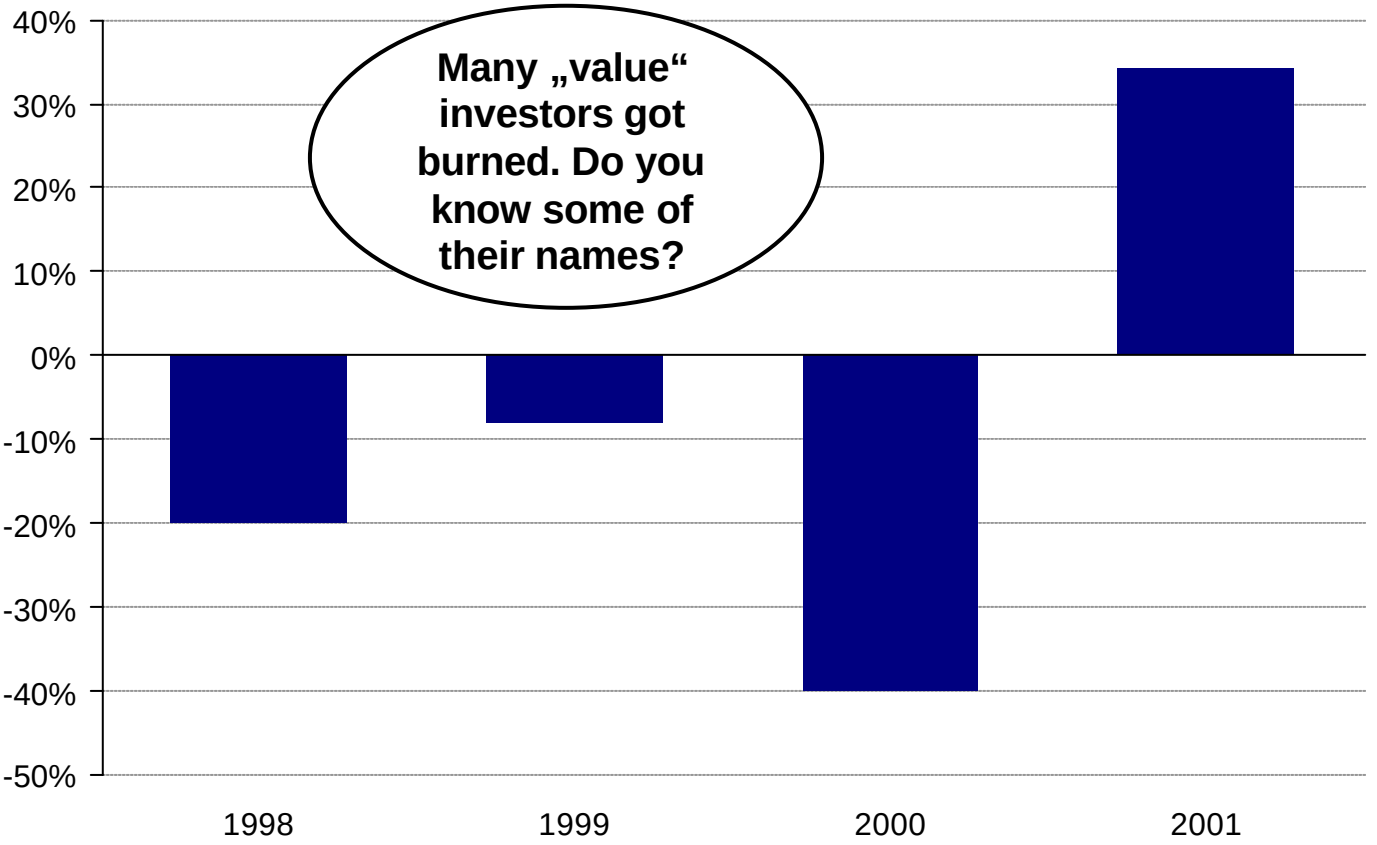
Source: Lakonishok, Shleifer and Vishny (1994)

Recently, the tide has turned against „value“ investors

PORTFOLIO OF BUYING „VALUE“ AND SELLING „GROWTH“ ´90s

Percent p.a., STOXX Euro Style Indices

BACKUP



Source: Mertens, Data from STOXX

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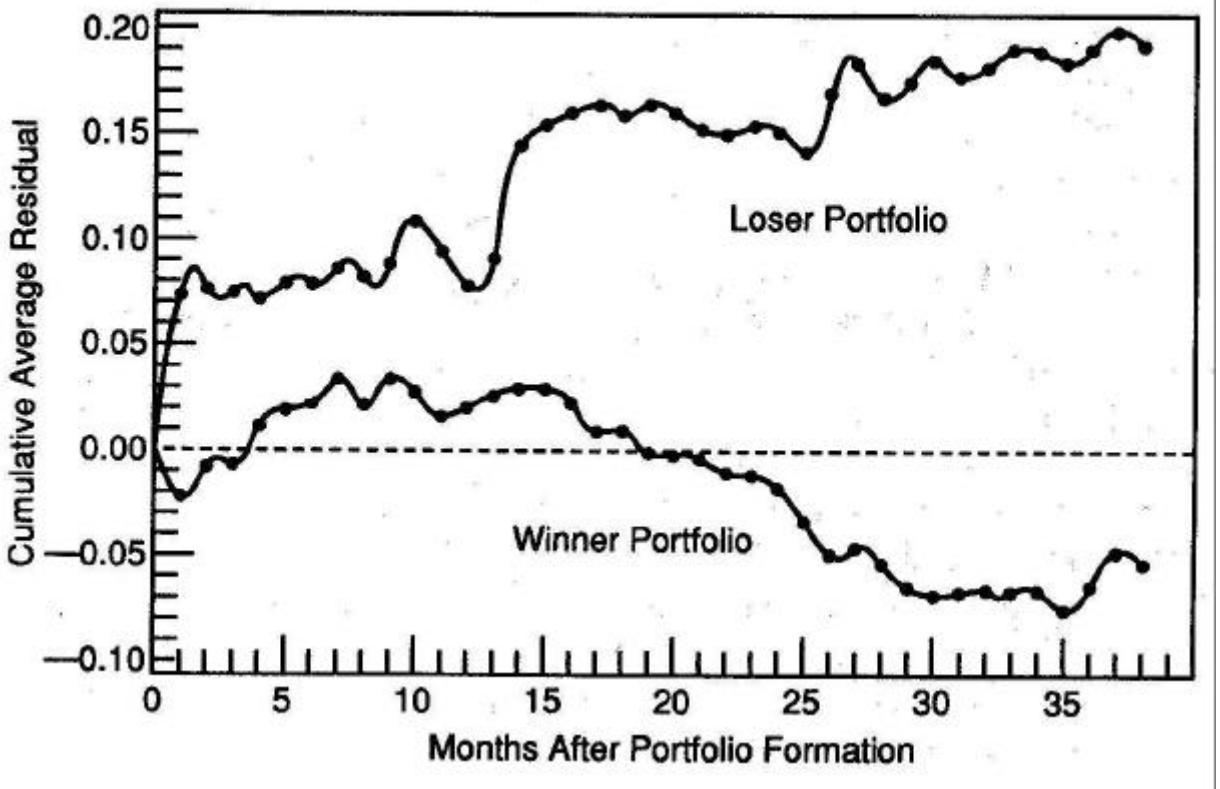
In the long-term, returns of extreme winner/loser tend to reverse

RETURNS TO PREVIOUS 5-YEAR'S WINNER/LOSER STOCKS (U.S.)

Market adjusted returns

Figure 1 Cumulative Average Residuals for Winner and Loser Portfolios of 35 Stocks (1–36 months into the test period)

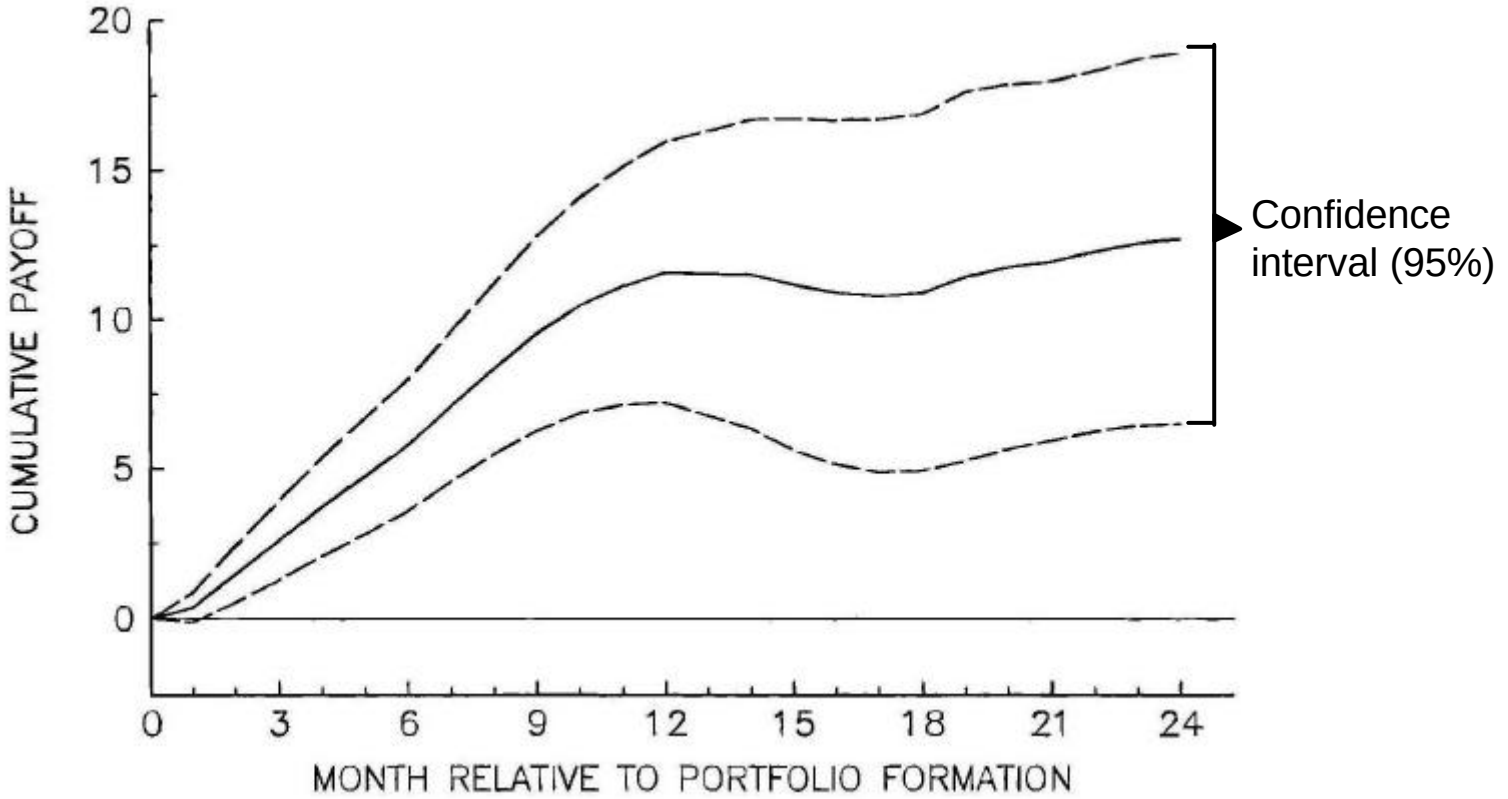


Source: DeBondt and Thaler (1985) reproduced in Thaler (1993)

Short-run continuations seem to be persistent, too

RETURN TO BUYING SHORT-RUN WINNER AND SELLING LOSER

Market adjusted return, international sample of stocks



Source: Rouwenhorst (1998)

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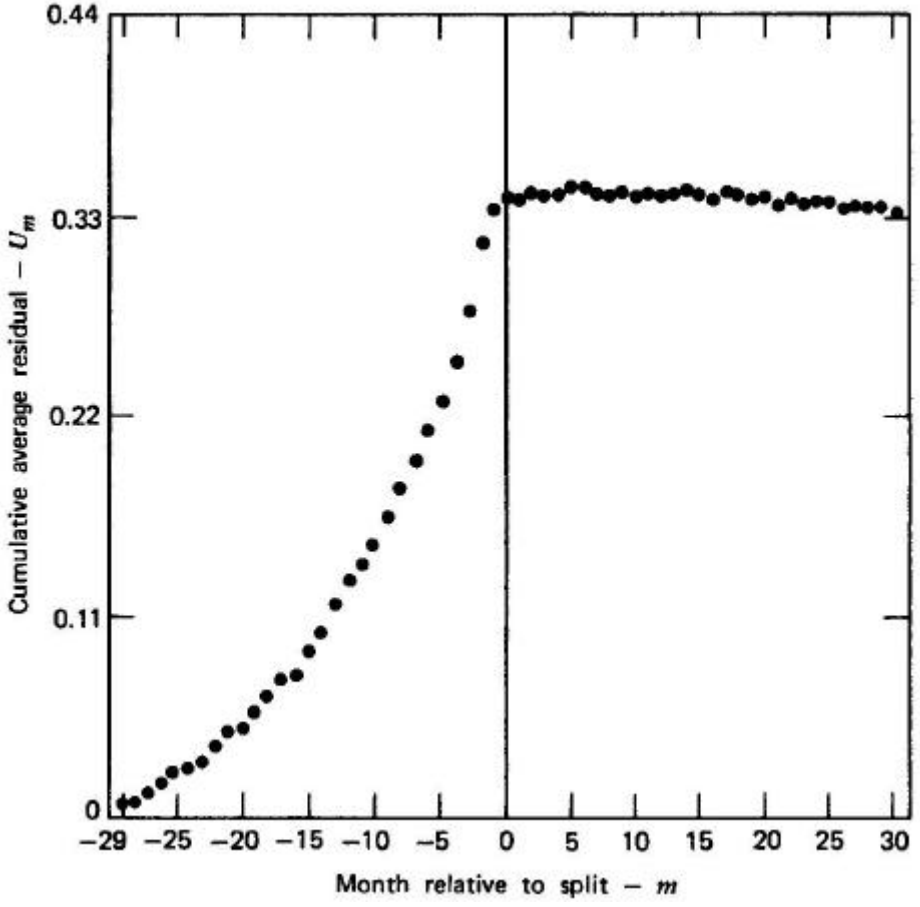
Clearly, stocks react to news about a company. And they react swiftly

REACTION TO ANNOUNCEMENT OF CORPORATE ACTIONS

„Event Returns“ when stock splits are announced



- **The paper of Fama, Fischer, Jensen and Roll (1969) is a.k.a. „mother of all event-studies“**
- **Hypothesis: Splits are sign of „good profits“**
- **Fama: „We were lucky. We expected to have some drift “**

Source: Mertens, Chart from Fama, Fischer, Jensen and Roll (1969)

Stocks rise when earnings are good, fall when they are bad and remain flat when the announcement has „no news“

RETURNS AROUND EARNINGS ANNOUNCEMENTS

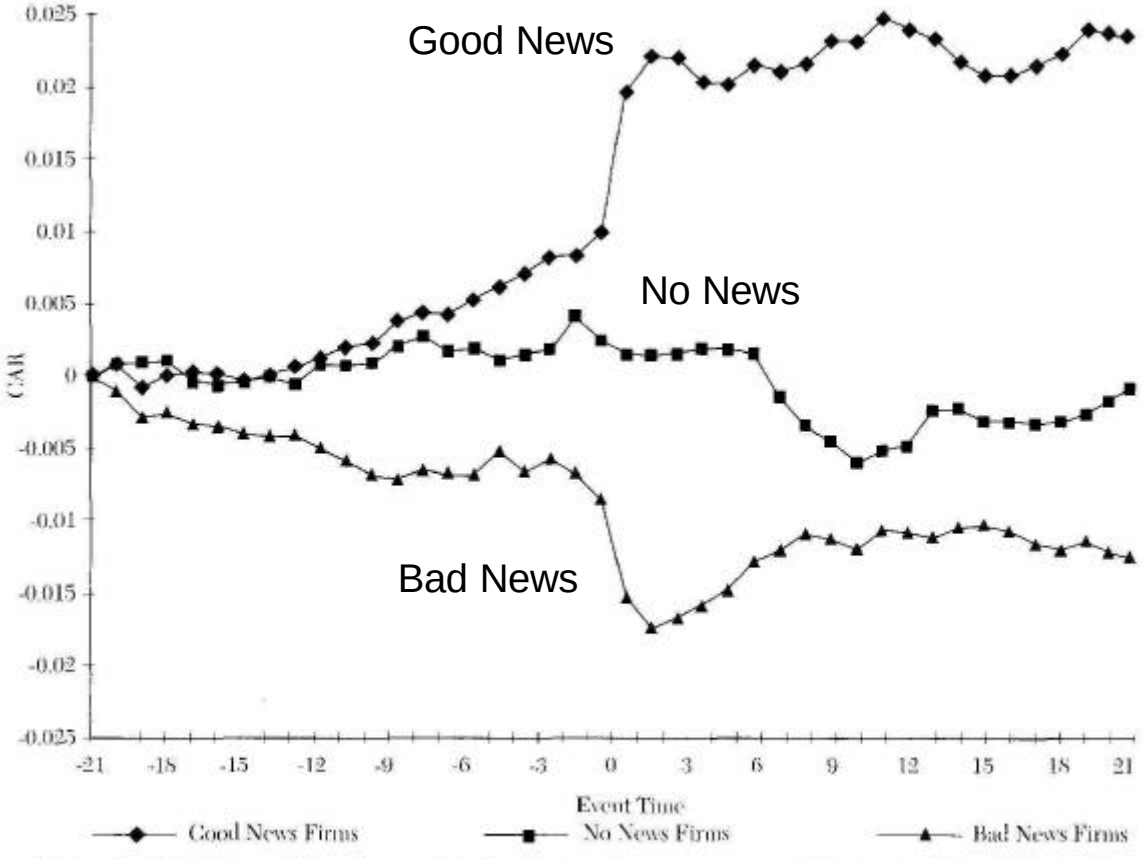


Figure 2a. Plot of cumulative abnormal return for earning announcements from event day -20 to event day 20. The abnormal return is calculated using the market model as the normal return measure.

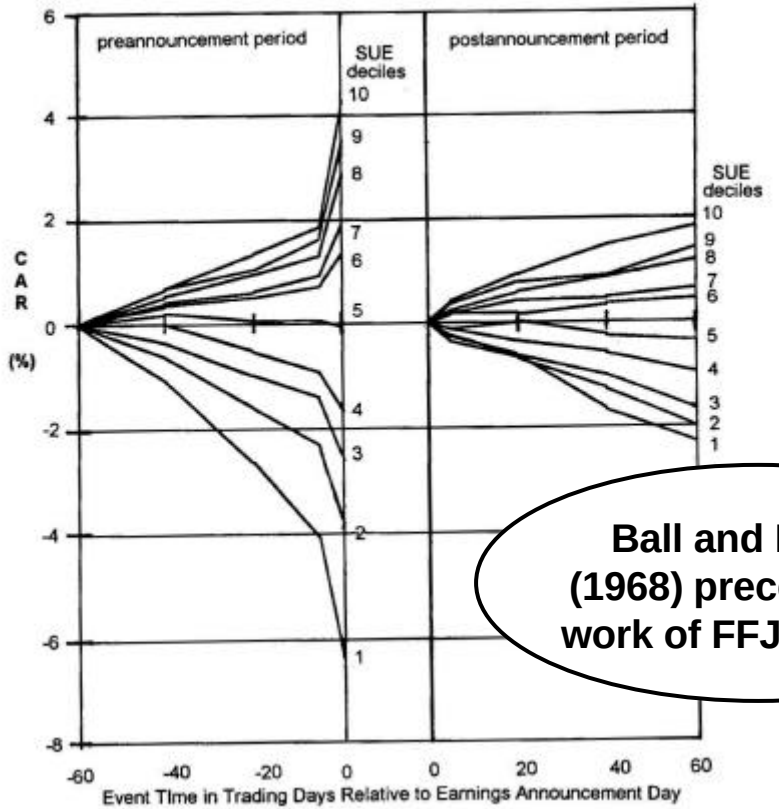
Source: MacKinlay (1997)

Surprisingly, stocks returns drift even once the news are well known

LONG-TERM REACTION AFTER NEWS

BACKUP

Figure 1 Cumulative Abnormal Returns (CAR) for SUE Portfolios (84,792 earnings announcements, 1974–1986)



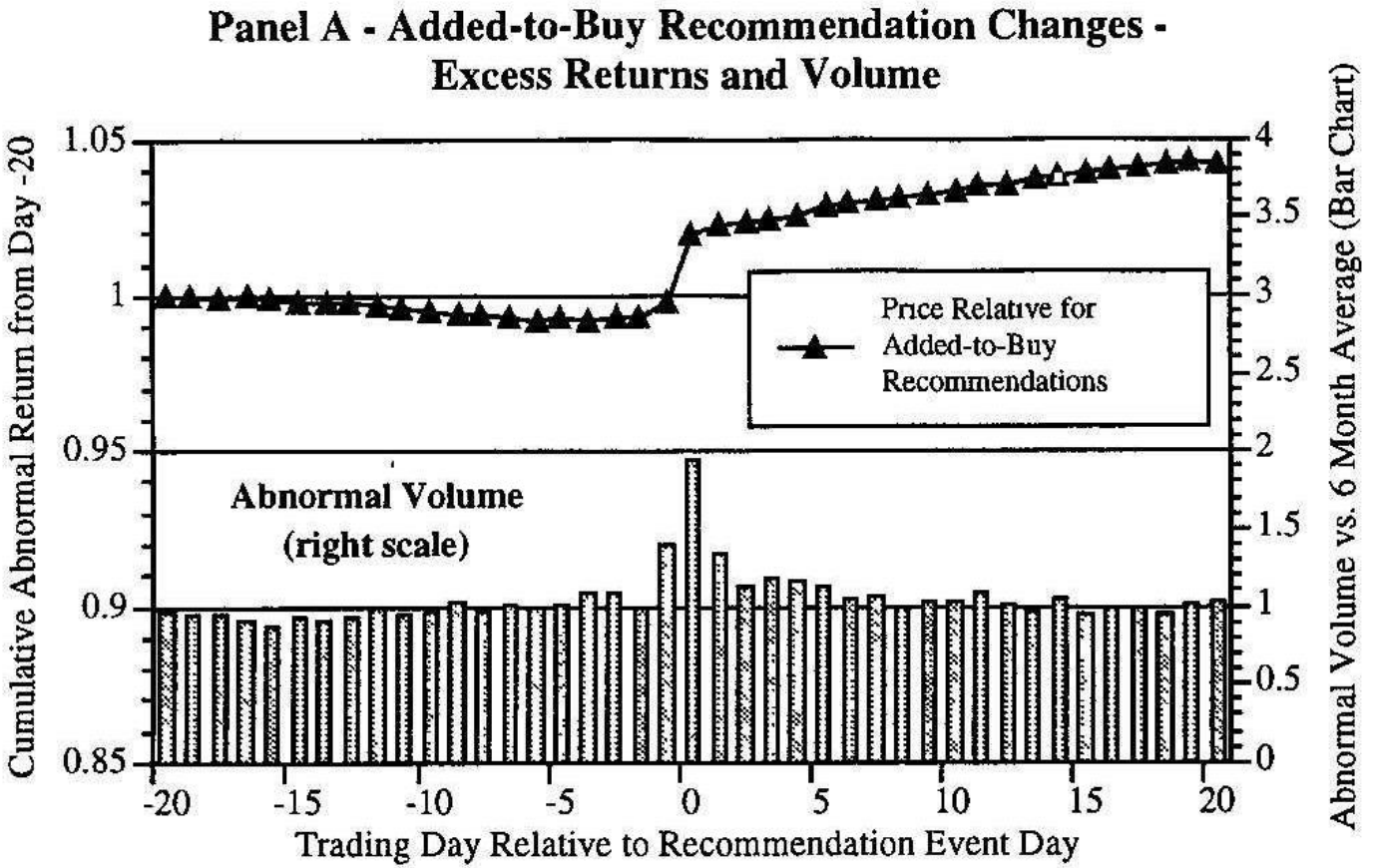
Ball and Brown (1968) preceded the work of FFJR (1969)!

Source: Bernard (1993) following Ball and Brown (1968)

Prices and volume react to analyst recommendations . . .

NEWS, RETURNS AND VOLUME: ANALYST RECOMMENDATIONS (A)

BACKUP

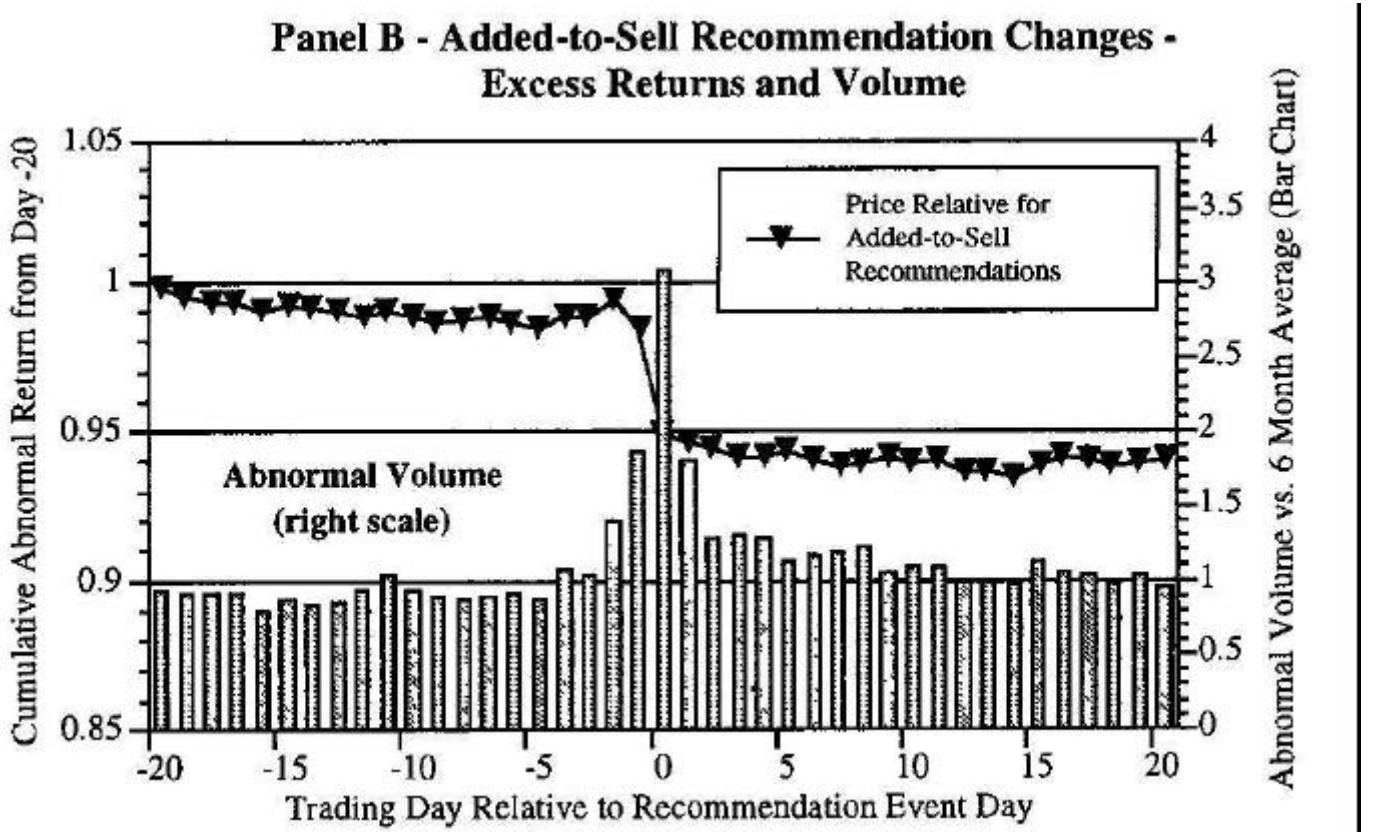


Source: Womack (1996)

. . . and the reaction is markedly stronger for sell-recommendations

NEWS, RETURNS AND VOLUME: ANALYST RECOMMENDATIONS (B)

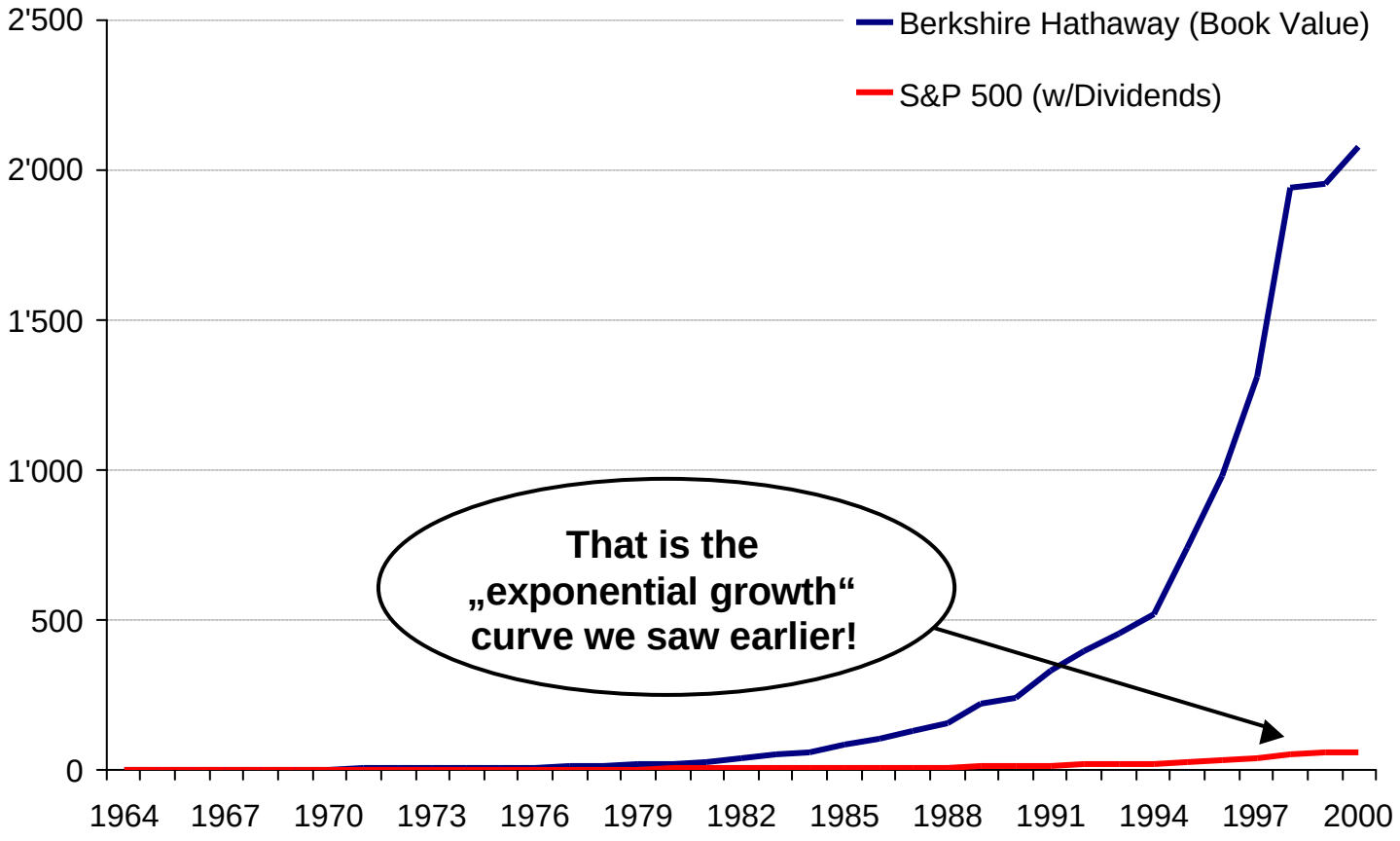
BACKUP



Source: Womack (1996)

Some people leave the market way behind

WARREN BUFFET: ORACLE OF OMAHA
1$ invested in 1964

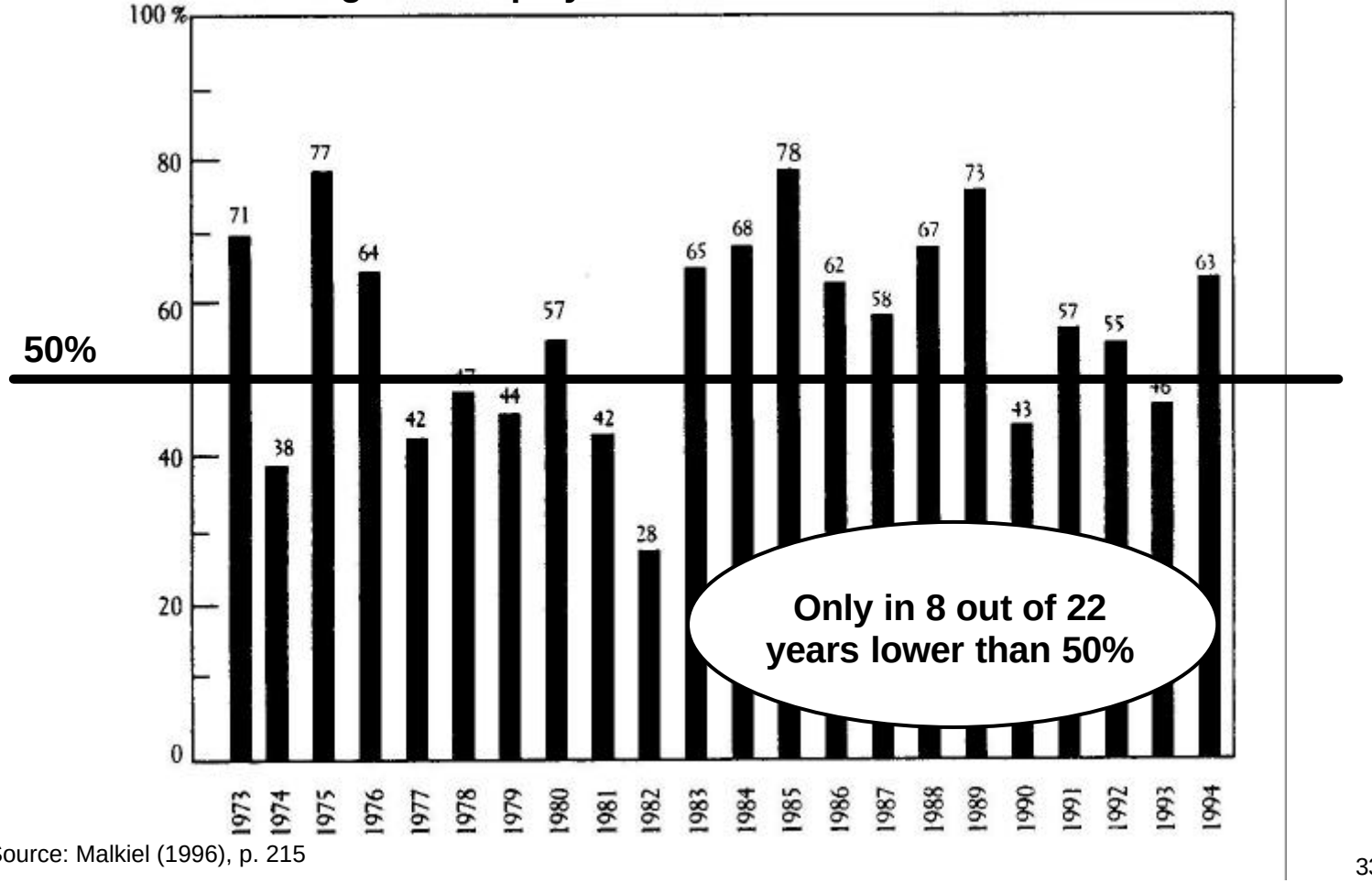


Source: Mertens, Data from Berkshire Hathaway

For the average fund, the odds of beating the market are less than even

FUNDS UNDERPERFORMING WILSHIRE 5‘000 INDEX

Percent of total U.S. general equity funds

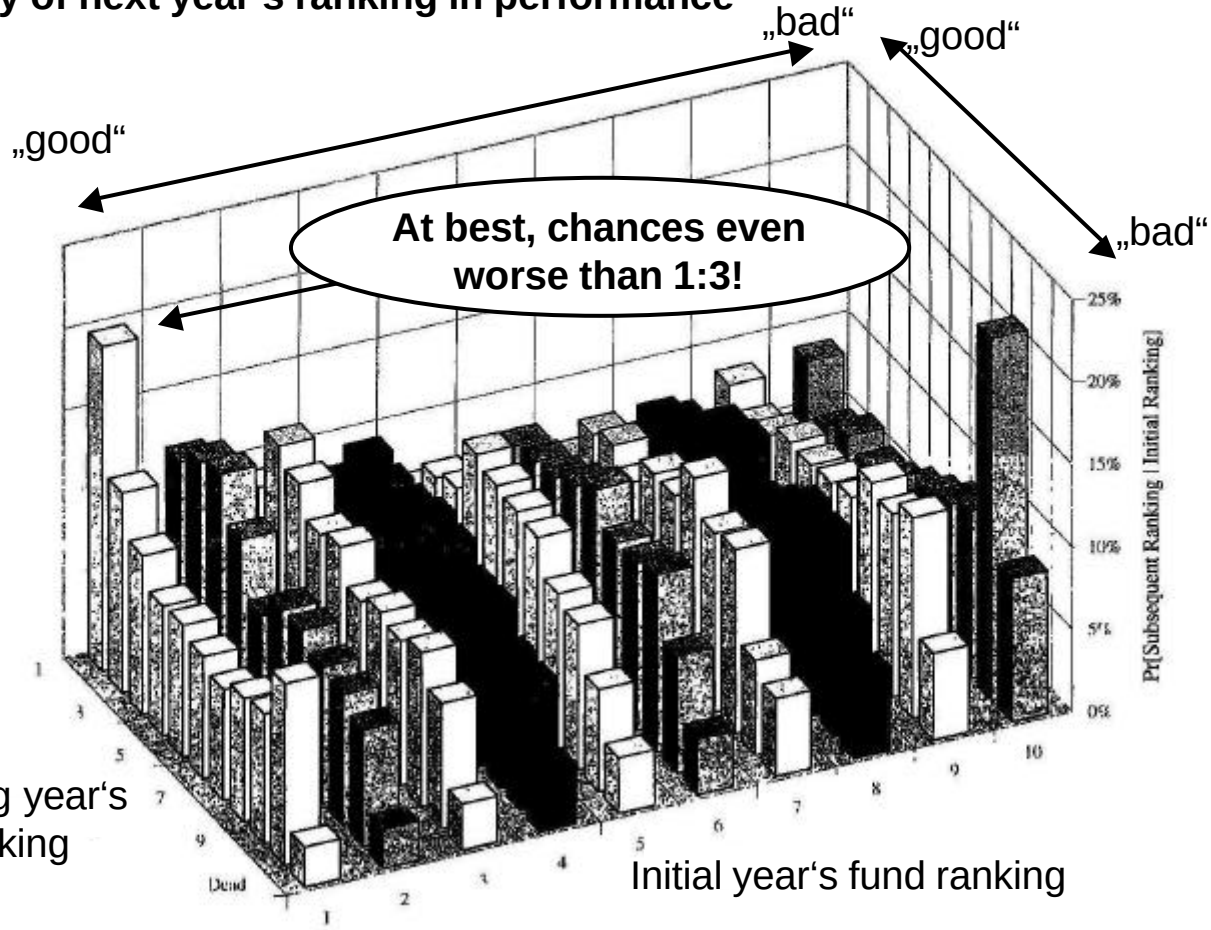


Source: Malkiel (1996), p. 215

Spotting a good manager in the past is not much help

PERSISTENCE OF INVESTMENT MANAGERS‘ SKILLS

Probability of next year‘s ranking in performance



Source: Carhart (1997)

Management fees raise the threshold for a fund‘s performance and dilute the record even further

PERFORMANCE AND EXPENSES: A CLASSIC

Frequency distribution of outperformance

Before Expenses

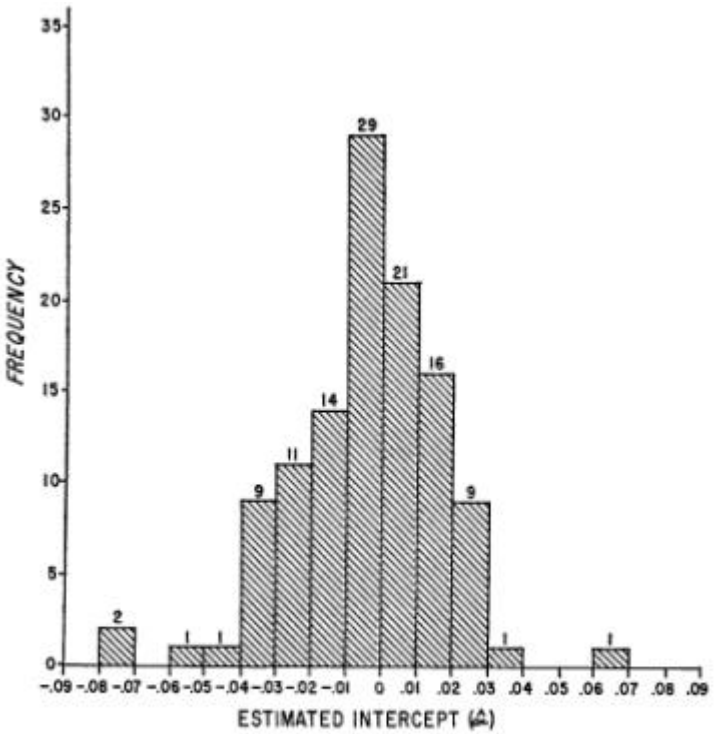


FIGURE 2

Frequency distribution (from col. (2), Table 4) of estimated intercepts ($\tilde{\alpha}$) for eq. (8) for 115 mutual funds for all years available for each fund. Fund returns calculated *gross* of all management expenses.

After Expenses

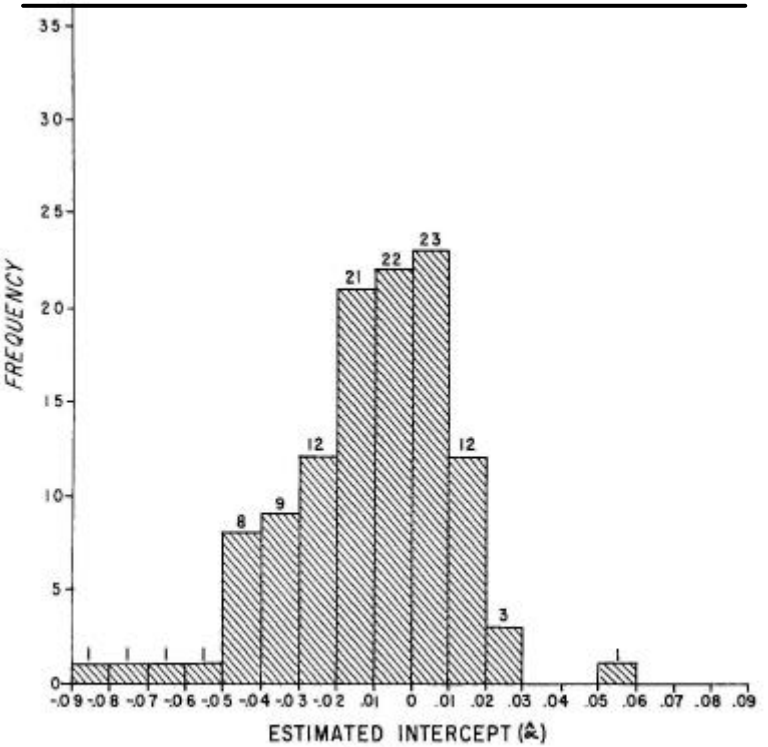


FIGURE 1

Frequency distribution (from col. (1), Table 4) of estimated intercepts ($\tilde{\alpha}$) for eq. (8) for 115 mutual funds for all years available for each fund. Fund returns calculated *net* of all expenses.

Source: Jensen (1968)

SUMMING UP: KEY QUESTIONS

- What determines asset prices?
- What is risk and where does it come from?
- Which factors influence the stock market and how?
- What information do we need for pricing?
- How shall we invest?

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LIST OF REFERENCES 1/2

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[b] : „bed-time“ reading (and still useful in daylight)