“The primary role of the capital market is allocation of ownership of the economy’s capital stock. In general terms, the ideal is a market in which prices provide accurate signals for resource allocation: that is, a market in which firms can make production-investment decisions, and investors can choose among the securities that represent ownership of firms’ activities under the assumption that security prices at any time ‘fully reflect’ all available information. A market in which prices ‘fully reflect’ available information is called efficient.” (“Efficient Capital Markets: A Review of Theory and Empirical Work”, Journal of Finance 25, 383–417.)
Kendall

• It may be that the motion of [stock prices] is genuinely random and that what looks like a purposive movement over a long period is merely a kind of economic Brownian motion. But economists -- and I cannot help sympathizing with them -- will doubtless resist any such conclusion.

• As Kendall put it, in discussing over 2,000 weekly price changes in Chicago spot wheat recorded for years between 1883 and 1914:
  – The series looks like a "wandering" one, almost as if once a week the Demon of Chance drew a random number from a symmetrical population of fixed dispersion and added it to the current price to determine next week's price.
Figure 4.3
Percent of equity mutual funds outperformed by Wilshire 5000 Index, 1972–2001

Source: The Vanguard Group.
Dollars Per Pound

Dollars per Pound Sterling
Pound Exchange Rate Histogram

Series: DPOUND
Observations 499

Mean       0.000121
Median   0.000300
Maximum  0.032800
Minimum -0.025800
Std. Dev.   0.009470
Skewness   0.282099
Kurtosis   3.236872
Jarque-Bera  7.784994
Probability  0.020394
D log Pound Histogram

Series: DELTAHIST
Observations 499

Mean 6.33e-05
Median 0.000171
Maximum 0.017934
Minimum -0.013673
Std. Dev. 0.005176
Skewness 0.288850
Kurtosis 3.302975
Jarque-Bera 8.847515
Probability 0.011989
Normal Distribution
Winners and Losers in Stock Picking

Figure 4.3
Percent of equity mutual funds outperformed by Wilshire 5000 Index, 1972-2001

Source: The Vanguard Group.
## Mutual Fund Returns


<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>1975–1979</td>
<td>15.8</td>
<td>18.8</td>
<td>241</td>
<td>20.2</td>
<td>22.8</td>
<td>16.8</td>
<td>18.2</td>
</tr>
<tr>
<td>1980–1984</td>
<td>15.5</td>
<td>15.1</td>
<td>459</td>
<td>16.3</td>
<td>17.3</td>
<td>14.6</td>
<td>15.0</td>
</tr>
<tr>
<td>1985–1989</td>
<td>20.8</td>
<td>19.0</td>
<td>676</td>
<td>20.2</td>
<td>19.5</td>
<td>17.4</td>
<td>16.4</td>
</tr>
<tr>
<td>1990–1994</td>
<td>9.3</td>
<td>9.5</td>
<td>1,567</td>
<td>10.8</td>
<td>11.3</td>
<td>9.7</td>
<td>10.1</td>
</tr>
<tr>
<td>1975–1994</td>
<td><strong>15.4</strong></td>
<td><strong>15.6</strong></td>
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<td><strong>14.6</strong></td>
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</tr>
</tbody>
</table>
Persistence
“Actually, ‘Monkey see, monkey do’ has served me quite well in this market.”
Event Studies

"Drat! I suppose the market has already discounted this, too."
Information Sets

- Weak-form set
- Semi-strong form set
- Strong-form set
Measuring Cumulative Abnormal Return
Aligning Dates

IBM's daily returns around 2/24/1993 announcement

Dell's daily returns around 4/4/1999 announcement

Announcement dates aligned at zero
Compute Average Abnormal Returns

Average of Dell's and IBM's abnormal returns around the announcement

Announcement dates aligned at zero
Cumulate Average Abnormal returns

- Cumulate average abnormal returns
- Align the curve vertically so that the CAR is zero right after the announcement day

New level

Announcement dates aligned at zero

- $t$

+ $t$
Stylized pattern of share price of merger
CAR around Merger Announcements
Share Price and CNBC Announcements

![Graph showing cumulative return over minutes relative to mention for Midday-Positive and Midday-Negative announcements.](image)

- **Midday-Positive**
- **Midday-Negative**

The graph illustrates the cumulative return percentage over minutes relative to the mention of positive and negative announcements during the midday trading session.
Earnings Surprises
Winners and Losers in Stock Picking
# Mutual Fund Returns

Wermers *(Journal of Finance, 2000)*

<table>
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<td>14.9</td>
</tr>
</tbody>
</table>
Persistence
Persistence in 5-year Performance,
1991-5 compared with 1996-2000

*Returns are annualized, less the median return.

Source: Morningstar® Principia®; Universe limited to Distinct Portfolios, 2005
Persistence in Performance
1995-9 compared to 2000-4

Persistence in 5 year Performances of 800 Mutual Fund Managers

First 5 Year Period (1995 - 1999)

Return

In order of ranking for this 5 year period - 1995-1999

Second 5 Year Period (2000 - 2004)

Return

In order of ranking from the first 5 year period - 1995-1999

*Returns are annualized, less the median return.

Source: Morningstar® Principia®; Universe limited to Distinct Portfolios, 2005
## Survivor Bias

<table>
<thead>
<tr>
<th></th>
<th>Second-Period Winners</th>
<th>Second-Period Losers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. No cut-off (n = 600)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First-period winners</td>
<td>150.09</td>
<td>149.51</td>
</tr>
<tr>
<td>First-period losers</td>
<td>149.51</td>
<td>150.09</td>
</tr>
<tr>
<td><strong>B. 5% cut-off (n = 494)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First-period winners</td>
<td>127.49</td>
<td>119.51</td>
</tr>
<tr>
<td>First-period losers</td>
<td>119.51</td>
<td>127.49</td>
</tr>
<tr>
<td><strong>C. 10% cut-off (n = 398)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First-period winners</td>
<td>106.58</td>
<td>92.42</td>
</tr>
<tr>
<td>First-period losers</td>
<td>92.42</td>
<td>106.58</td>
</tr>
</tbody>
</table>
Small Firm in January Effect

- **Average return in excess of risk-free rate**
- **Return in excess of CAPM**

Excess Returns (%)

Size Decile: 1 = small, 10 = large
“Actually, ‘Monkey see, monkey do’ has served me quite well in this market.”
Event Studies

"Drat! I suppose the market has already discounted this, too."
3Com/Palm Stub  3/2/00 thru 9/19/00

3/20: 3Com announced distribution to occur by September, earlier than planned

3/16: Options start trading on subsidiary

5/8: IRS approval announced, Palm shares to be distributed 7/27

7/27: Distribution
Negative Stub Widens
Pct discount of premium of Tricontinental Corp end of year. Pct discount = $100 \times \frac{\text{NAV} - \text{SP}}{\text{NAV}}$, mean = 14.3, min = -2.5
Gross and Net Asset Value

\[ A_t, \quad (1 - \gamma)A_t, \quad (1 - \gamma - \delta)A_t \]
Royal Dutch relative to Shell
• http://www.ft.com/cms/s/bf5ce814-bf6a-11db-995a-000b5df10621.html
Ponzi
Internet Bubble

Figure 1. Returns on equally weighted Internet index, S&P 500 and Nasdaq composite. Comparison of index levels of the equally weighted Internet index, the S&P 500 index, and the Nasdaq composite index for the period 1/1/1998–12/31/2000. All three indexes are scaled to be 100 on 12/31/1997.
NASDAQ, 1993-2003
Sun Microsystems P/E Ratio
Yahoo P/E Ratio
P/E Ratios and Returns

The Future 10-Year Real Rates of Return When Stocks are Purchased at Alternative Initial Price-to-Earnings (P/E) Multiples (1871 - 2004)

- Cheapest 20% (5.6x - 10.1x): 11.6%
- Second 20% (10.1x - 12.7x): 8.1%
- Third 20% (12.7x - 14.9x): 6.8%
- Fourth 20% (14.9x - 17.9x): 4.1%
- Most expensive 20% (17.9x - 26.6x): 4.7%

Today
Figure 2. Weight of Nasdaq technology stocks (high P/S) in aggregate hedge fund portfolio versus weight in market portfolio. At the end of each quarter, we compute the weight, in terms of market value, of high P/S quintile Nasdaq stocks in the overall stock portfolio of hedge funds, given their reported holdings on form 13F. For comparison, we also report the value-weight of high P/S stocks in the market portfolio (all stocks on CRSP).
Semper Augustus Bulb
Gouda Buds
South Sea Bubble
South Sea Share Prices

Figure 17.1
Daily South Sea Share Prices, 1720. Data courtesy of Larry Neal.
### South Sea Bubble versus Dotcom Stocks

<table>
<thead>
<tr>
<th>Stock</th>
<th>Price increase*</th>
<th>Peak-to-trough**</th>
<th>St.dev. of daily returns</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>South Sea bubble</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Sea Company</td>
<td>843.0%</td>
<td>-88.0%</td>
<td>6.3%</td>
</tr>
<tr>
<td>East India Company</td>
<td>45.0%</td>
<td>-68.0%</td>
<td>12.8%</td>
</tr>
<tr>
<td>Bank of England</td>
<td>51.0%</td>
<td>-54.0%</td>
<td>15.8%</td>
</tr>
<tr>
<td><strong>Dotcom mania</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amazon</td>
<td>188.0%</td>
<td>-79.9%</td>
<td>5.9%</td>
</tr>
<tr>
<td>Cisco</td>
<td>220.0%</td>
<td>-76.5%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Microsoft</td>
<td>86.0%</td>
<td>-65.0%</td>
<td>3.0%</td>
</tr>
</tbody>
</table>

* Note: * from minimum during 12 months prior to peak
  ** Note: ** 12 months subsequent to peak
Hoare’s own account trading, 1720

<table>
<thead>
<tr>
<th>Security</th>
<th>Number of transactions in 1720</th>
<th>Average value</th>
<th>Average number of shares traded</th>
<th>Total value traded</th>
<th>Maximum investment*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank of England</td>
<td>20</td>
<td>2,357</td>
<td>1,450</td>
<td>47,155</td>
<td>22,623</td>
</tr>
<tr>
<td>Ram’s Insurance</td>
<td>4</td>
<td>250</td>
<td>2,250</td>
<td>1,000</td>
<td>265</td>
</tr>
<tr>
<td>East India Company</td>
<td>7</td>
<td>3,423</td>
<td>1,071</td>
<td>23,960</td>
<td>14,990**</td>
</tr>
<tr>
<td>South Sea Company</td>
<td>54</td>
<td>2,593</td>
<td>1,157</td>
<td>140,029</td>
<td>37,520</td>
</tr>
<tr>
<td>Royal African Company</td>
<td>5</td>
<td>672</td>
<td>804</td>
<td>3,360</td>
<td>900</td>
</tr>
</tbody>
</table>

Note: * measured on a cost basis.
** missing data on initial investment; lower bound.
South Sea Stock Price and Hoare’s Trading
South Sea price and Hoare’s holdings of stock
Mississippi Bubble Money and Prices
Prices of shares in the Compagnie des Indes.
Mississippi Bubble and Stock Price
French Fiscal System Before Law

\[ g \leq \tau - 90mL \]

State

creditor

“constant” = 90mL

Public

Collectors

\[ \tau \]

\[ \bar{\tau} \]
French Fiscal System after Law

\[ g \leq \bar{\tau} - 48mL \]
Hedge Fund holdings around price peaks

![Graph showing the share of equity held (in %) over quarters around price peak for High P/S Nasdaq, Other Nasdaq, and NYSE/AMEX stocks.](image)

**Figure 5.** Average share of outstanding equity held by hedge funds around price peaks of individual stocks. For each stock, we construct a quarterly total return index from 1998 to 2000, from which we determine each stock's price peak during this period. Each quarter, we also calculate the proportion of outstanding shares that is held by hedge funds. For stocks with peaks in 1999 or 2000, we align these time-series of holdings in event time (value-weighted), where the price peak is the event-time quarter 0. We then average hedge fund holdings in event time across all stocks in the sample. The figure presents these event-time averages for three different samples of stocks: Stocks in the high P/S quintile of the Nasdaq, other Nasdaq stocks, and NYSE/AMEX stocks.