# Value Investing

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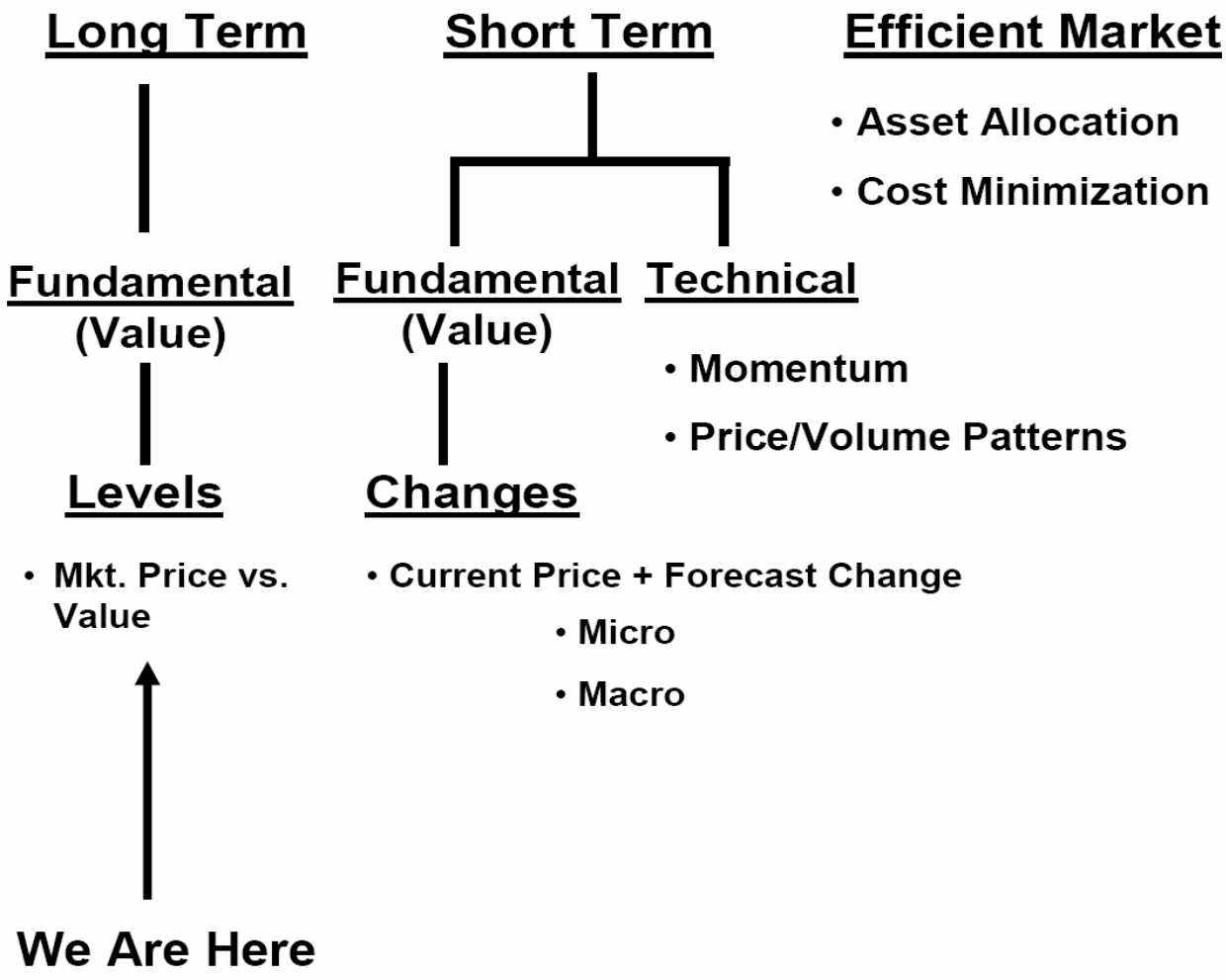
Based on: Value Investing: FROM GRAHAM TO BUFFETT AND BEYOND, Bruce C.N.Greenwald, Judd Kahn, Paul.D.Sonkin, & Michael Biema

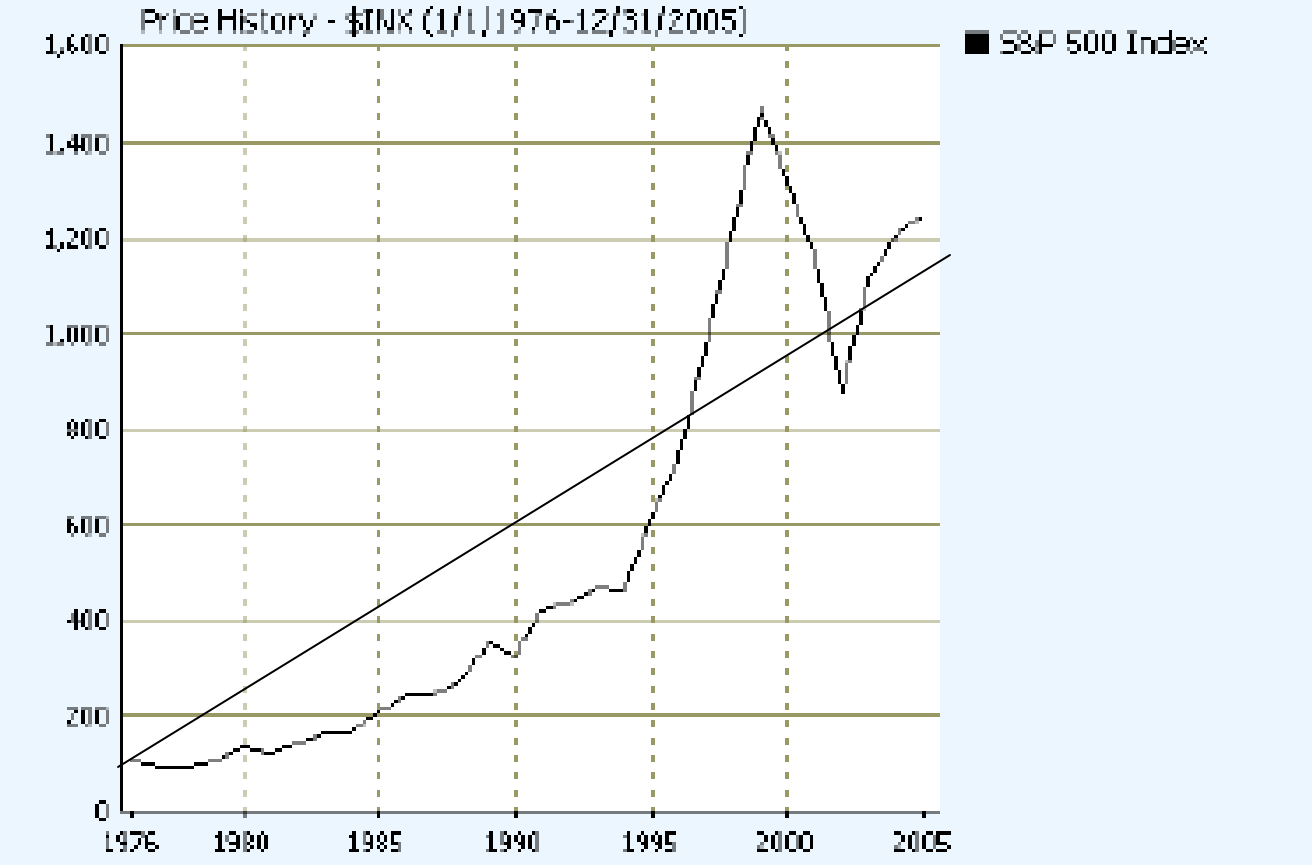
# Approaches to Investing



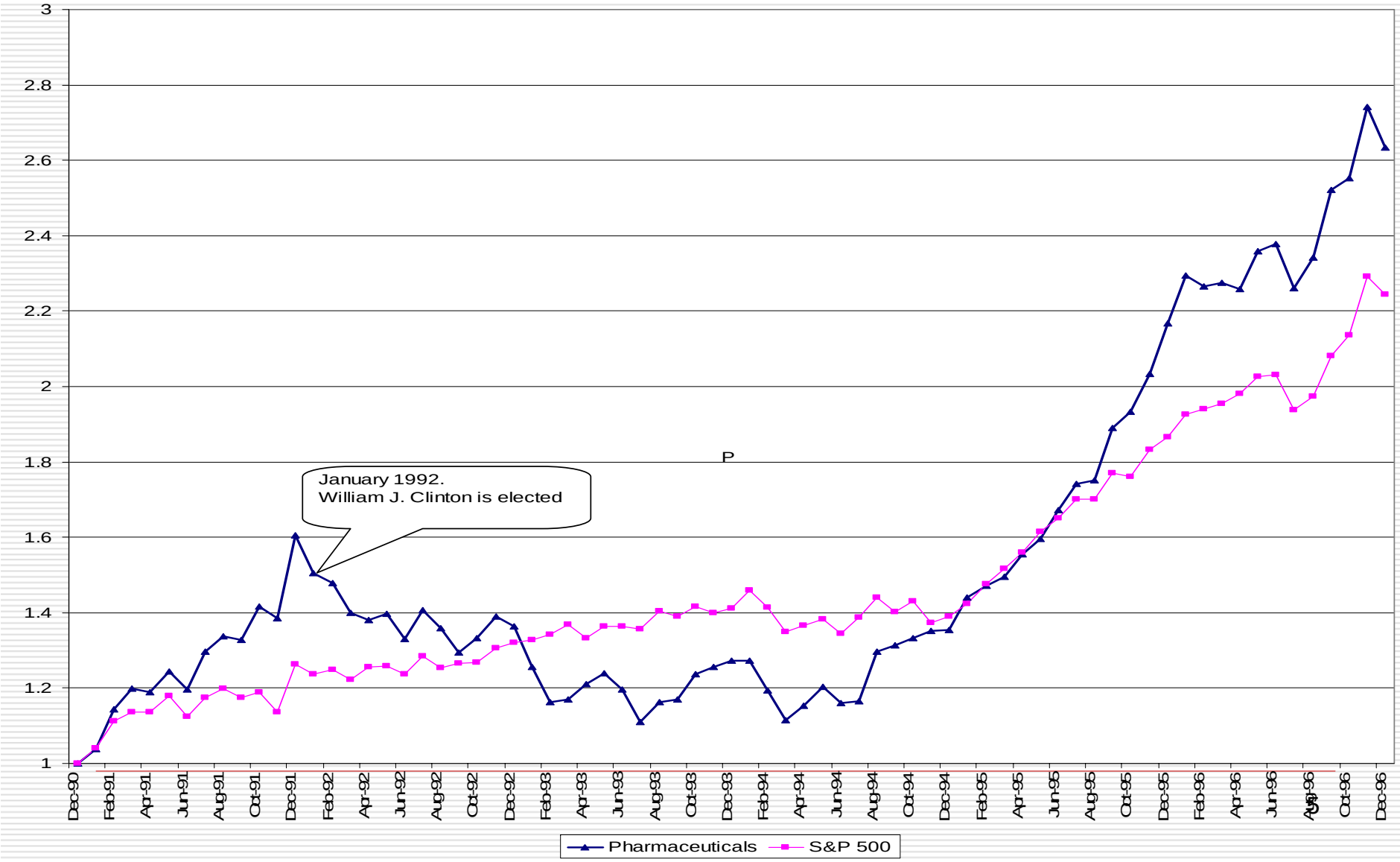
# Essentials of Value Investing

- Specific Premises
  - Mr. Market is a Strange Guy
    - Prices fluctuate around fundamental values in a systematic random way
      - Gordon Formula is helpful here to think these issues through!!
- You Can Buy Underpriced Stocks
  - Assumption is, Fundamentals values are often measurable
- Future Price
  - Will hover around fundamental value
  - So, Fundamental Value determines future price
- => Buying underpriced stocks + Patience ➔ Superior Returns

# S&P 500 and Trend



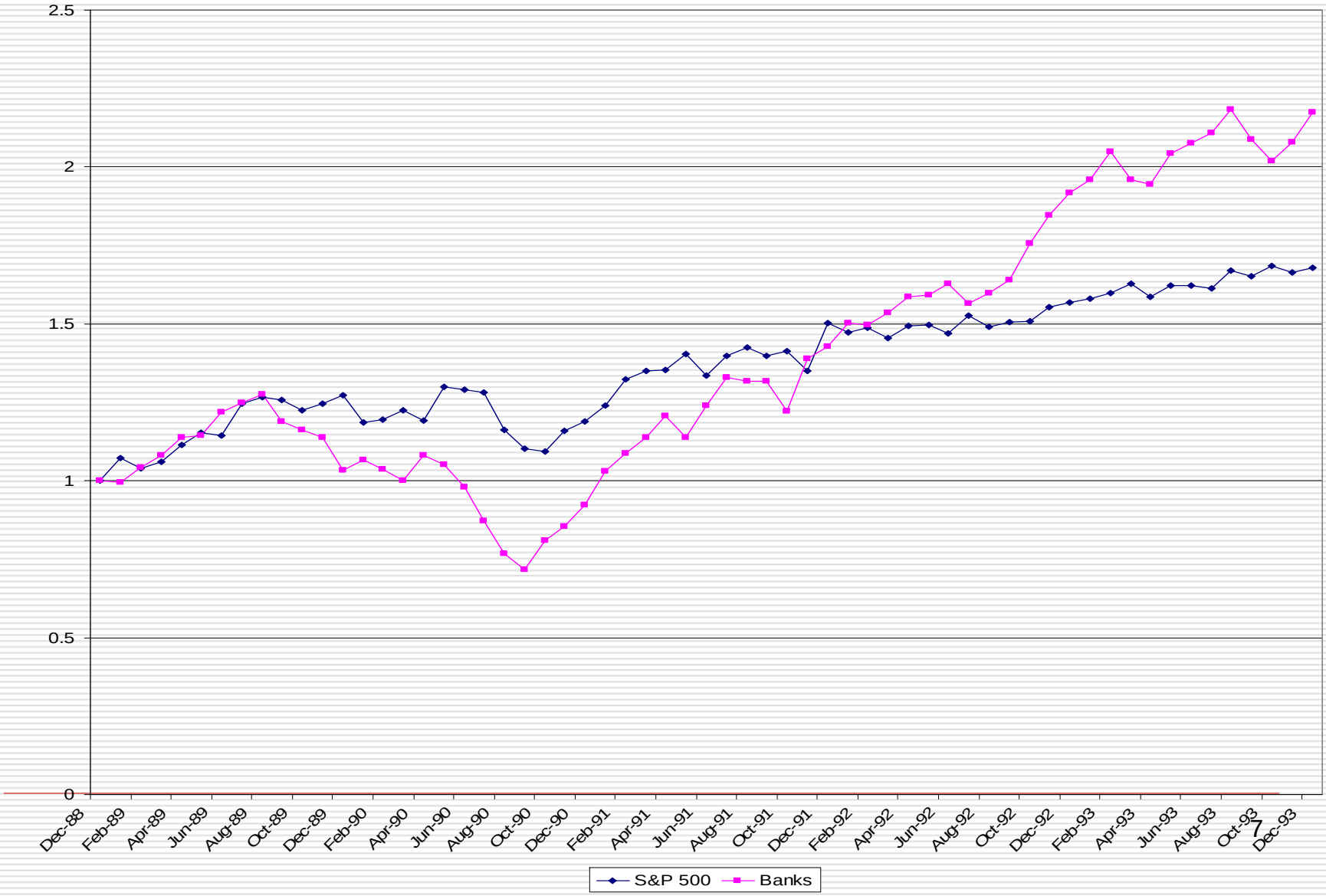
# Pharmaceutical Stocks & Clinton's Election



# Banks 1990/91

- Unanticipated recession in the economy
- Real Estate hit particularly hard
  - Bad loans increase
- Most banks hit
  - Some banks that took a hit were wise
    - Did not sell large chunks of property at steep discounts
    - Sold property by property when prices were more realistic
- Those who bought bank shares in 1990/91 rewarded well by 1993

# Bank Stocks Vs S&P500 Ninetees



# Value Investing in Practice

- Look Intelligently for Value Opportunities
  - Low P/E, High B/M are candidates
    - Mr.Market is not Crazy about Everything
    - This is not Value Investing
      - Just an initial screen to narrow the choices
  - Know What You Know
    - Not All Value is Measurable
    - Not All Value is Measurable by You (Circle of Competence)
  - You Don't Have to Swing!
    - Value => Concentration
      - Not random "naïve" diversification
      - Margin of safety to minimize "Risk"
    - At Worst,
      - You always have the option to buy the "Market"

# Value Investing, The Approach

- Search
  - Value
    - Review
      - Manage Risk – Margin of safety; clever diversification of the risks (...)

# Search Criteria

- Obscure
  - Small Capitalization
  - Spin-Offs
  - Boring – low analyst coverage
- Undesirable
  - Financial Distress, Bankruptcy
  - Low Growth, Low P/E, Low M/B
  - Industry Problems (Bad Loans, Regulatory Threat, Overcapacity)
  - Company Problem (Lawsuit, Poor Subsidiary Performance, Poor Year)
  - Disappointing (Long Term Underperformance)
- Supply – Demand Imbalance
  - RTC asset sales
  - Privatizations
- Value approach to investing in the bond market
  - Similar principles apply; More complex the covenants are the more potential for value investors; but we will not cover here

# Stocks as Attractive Assets (Digression)

- Stocks historically outperformed bonds, …
  - Stocks are not that much more risky in the long-run (are they??)

- How is valuation today?
  - Stocks (S&P500):
    - E/P = 6% (Next year forecasted earnings/Current Index Value)
    - D/P = 2%
    - Growth rate in dividends = 4% (??)
    - $E[r_{real}]$ = D/P + g = 2% + 4% = 6%
  - Long bond yield = 5% (nominal)
    - TIPS long yield = 2%
  - Equity Premium = 6% - 2% = 4% (??)

# Do Prices Differ From Intrinsic Values ?
## Are there really value investing opportunities?

- Some Empirical Evidence
  - Campbell and Shiller, Review of Financial Studies, 1988
    - Most of the fluctuation in stock prices is unrelated to news about future cashflows!
  - Fama and French, Journal of Political Economy, 1988
    - There is a slowly mean-reverting component to stock prices
  - Jegadeesh and Titman, Journal of Finance, 1992, & other articles...
    - Shortrun reversal; Medium term continuation..
  - Loughran and Ritter, Journal of Finance, 1995
    - Five year buy-hold return on IPOs during 1970-90: 15.7%
    - On Matching firms during 1970-90: 66.4%
  - De Bondt and Thaler, Journal of Finance, 1985
    - Longrun reversal in stock prices

# Thaler & De Bondt, JoF 1985

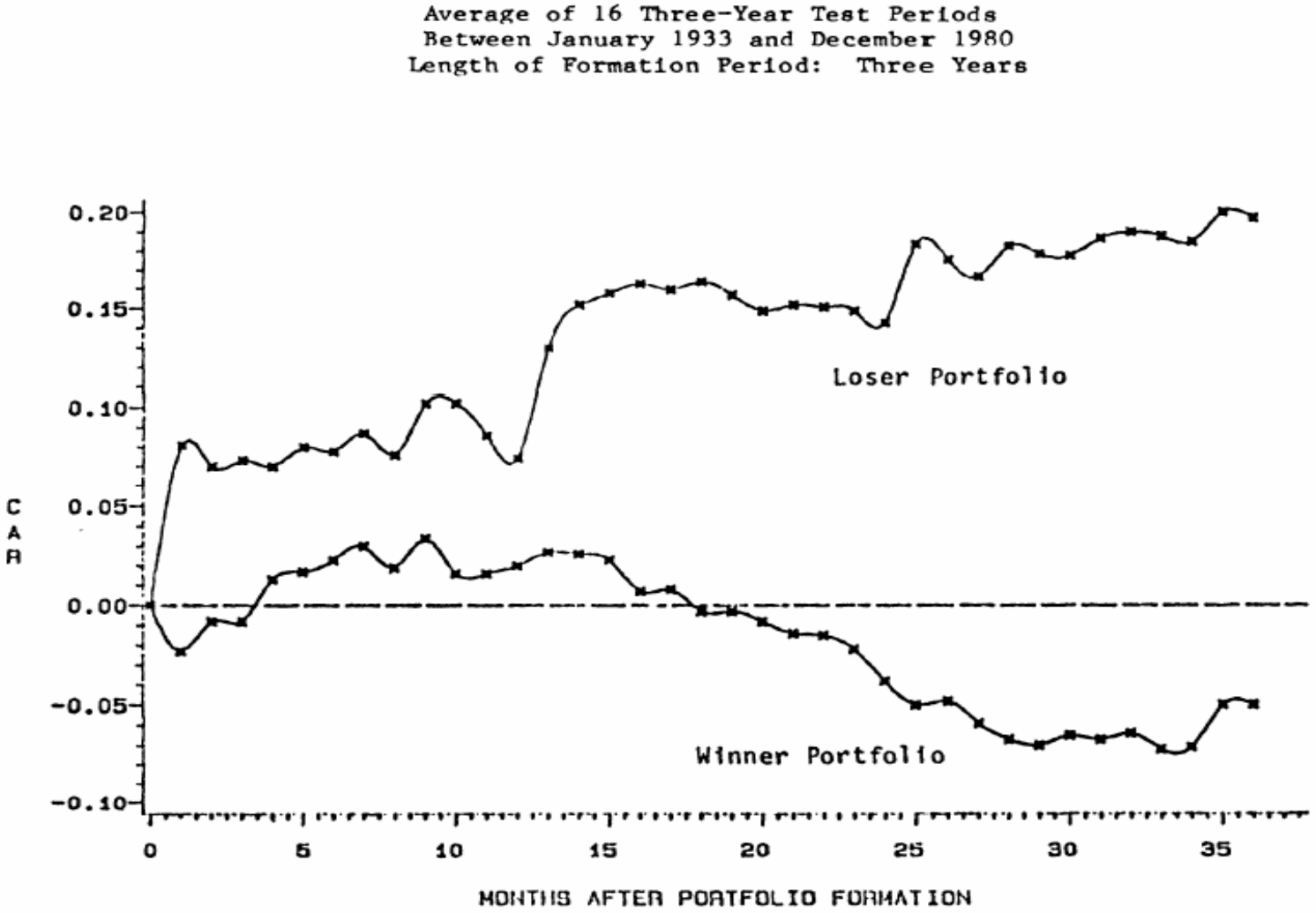



**Figure 1.** Cumulative Average Residuals for Winner and Loser Portfolios of 35 Stocks (1–36 months into the test period)

# Lee & Swaminathan, JoF 2000

Panel C: Five Price Momentum, Five Trading Volume Portfolios

| | $K = 3$ | | | | $K = 6$ | | | | $K = 9$ | | | | $K = 12$ | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Portfolio | V1 | V3 | V5 | V5 – V1 | V1 | V3 | V5 | V5 – V1 | V1 | V3 | V5 | V5 – V1 | V1 | V3 | V5 | V5 – V1 |
| R1 | 1.23 | 1.00 | 0.12 | −1.11 | 1.24 | 0.88 | 0.22 | −1.02 | 1.20 | 0.87 | 0.29 | −0.91 | 1.25 | 0.91 | 0.39 | −0.86 |
| | (3.32) | (2.64) | (0.27) | (−4.87) | (3.40) | (2.36) | (0.51) | (−4.75) | (3.38) | (2.38) | (0.68) | (−4.50) | (3.51) | (2.47) | (0.92) | (−4.38) |
| R3 | 1.40 | 1.39 | 0.98 | −0.42 | 1.41 | 1.37 | 0.98 | −0.43 | 1.44 | 1.38 | 1.01 | −0.43 | 1.44 | 1.34 | 0.98 | −0.46 |
| | (5.81) | (4.86) | (2.67) | (−2.10) | (5.71) | (4.79) | (2.66) | (−2.21) | (5.82) | (4.80) | (2.75) | (−2.29) | (5.83) | (4.64) | (2.66) | (−2.47) |
| R5 | 1.56 | 1.64 | 1.39 | −0.16 | 1.66 | 1.67 | 1.41 | −0.25 | 1.73 | 1.74 | 1.42 | −0.31 | 1.66 | 1.65 | 1.28 | −0.37 |
| | (5.73) | (5.38) | (3.77) | (−0.82) | (6.00) | (5.40) | (3.78) | (−1.26) | (6.15) | (5.59) | (3.76) | (−1.60) | (5.93) | (5.37) | (3.41) | (−1.97) |
| R5 – R1 | 0.33 | 0.64 | 1.28 | 0.95 | 0.42 | 0.79 | 1.19 | 0.77 | 0.53 | 0.87 | 1.13 | 0.60 | 0.40 | 0.75 | 0.89 | 0.49 |
| | (1.38) | (2.85) | (5.76) | (4.86) | (1.91) | (3.90) | (6.02) | (4.59) | (2.73) | (4.79) | (6.21) | (4.19) | (2.20) | (4.30) | (5.07) | (3.66) |

K = holding period in months

Ri = i'th quintile based on past 6 month return

Vi = i'th quintile based on past trading volume

# Daniel and Titman, FAJ 1999

Table 1: **The Returns of Size, Book-to-Market and Momentum Sorted Portfolios** *1963:07-1997:12*

| **Panel A:** *Raw Returns, All Quintiles* | | | | | | | |
|---|---|---|---|---|---|---|---|
| | *Low* | | **BM** | | *High* | $H-L$ | T-stat |
| *Low* | 0.454 | 0.713 | 1.067 | 1.166 | 1.389 | 0.935 | (5.286) |
| | 0.728 | 0.980 | 1.137 | 1.288 | 1.455 | 0.727 | (4.748) |
| **M-m** | 0.922 | 1.058 | 1.174 | 1.298 | 1.369 | 0.447 | (2.730) |
| | 1.043 | 1.141 | 1.162 | 1.364 | 1.400 | 0.357 | (1.930) |
| *High* | 1.206 | 1.418 | 1.369 | 1.511 | 1.494 | 0.288 | (1.449) |
| $H-L$ | 0.752 | 0.705 | 0.302 | 0.345 | 0.105 | HH-LL | |
| T-stat | (3.838) | (4.027) | (1.866) | (2.180) | (0.587) | 1.0398 | (5.656) |

# Daniel and Titman, FAJ 1999

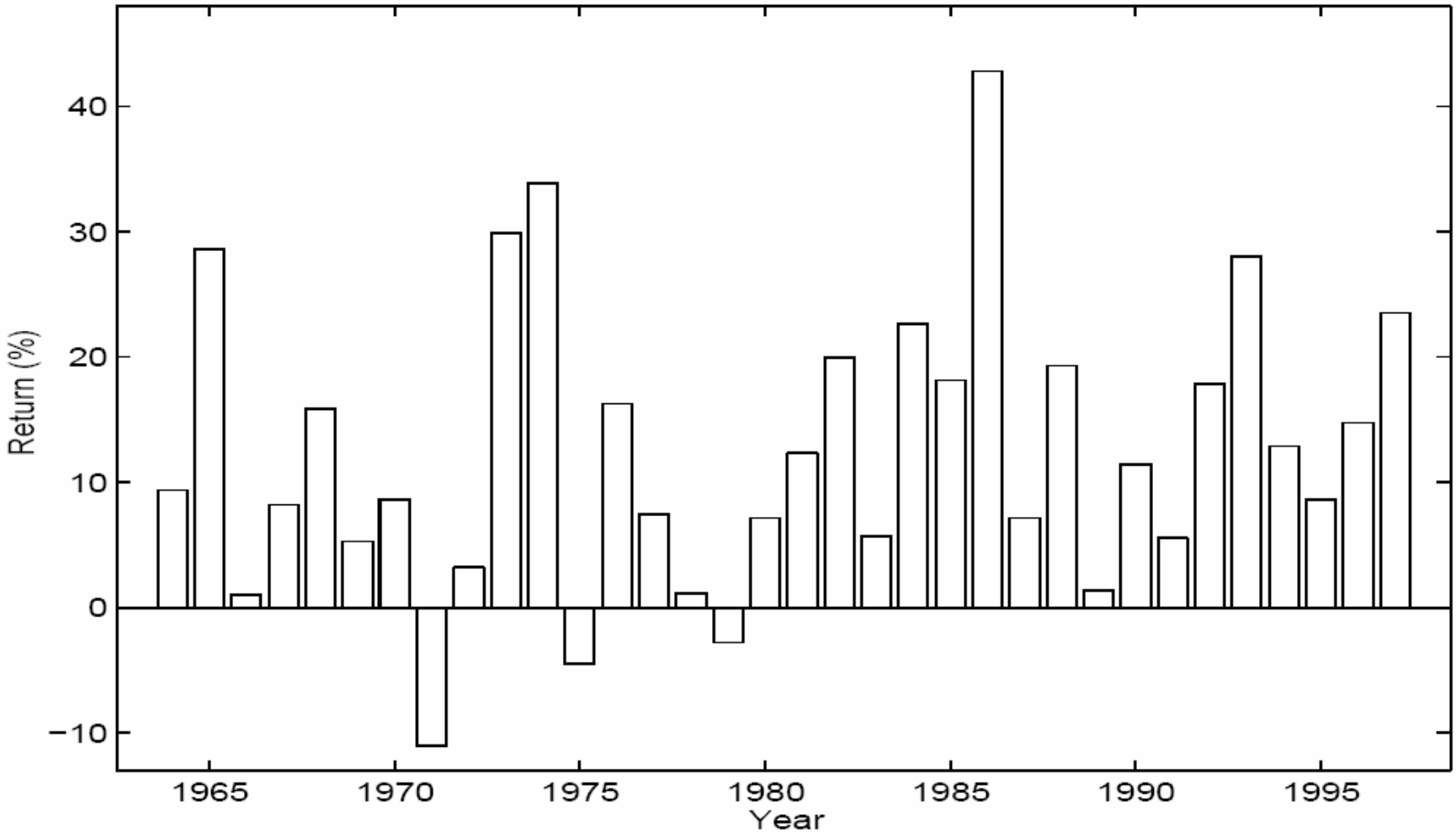
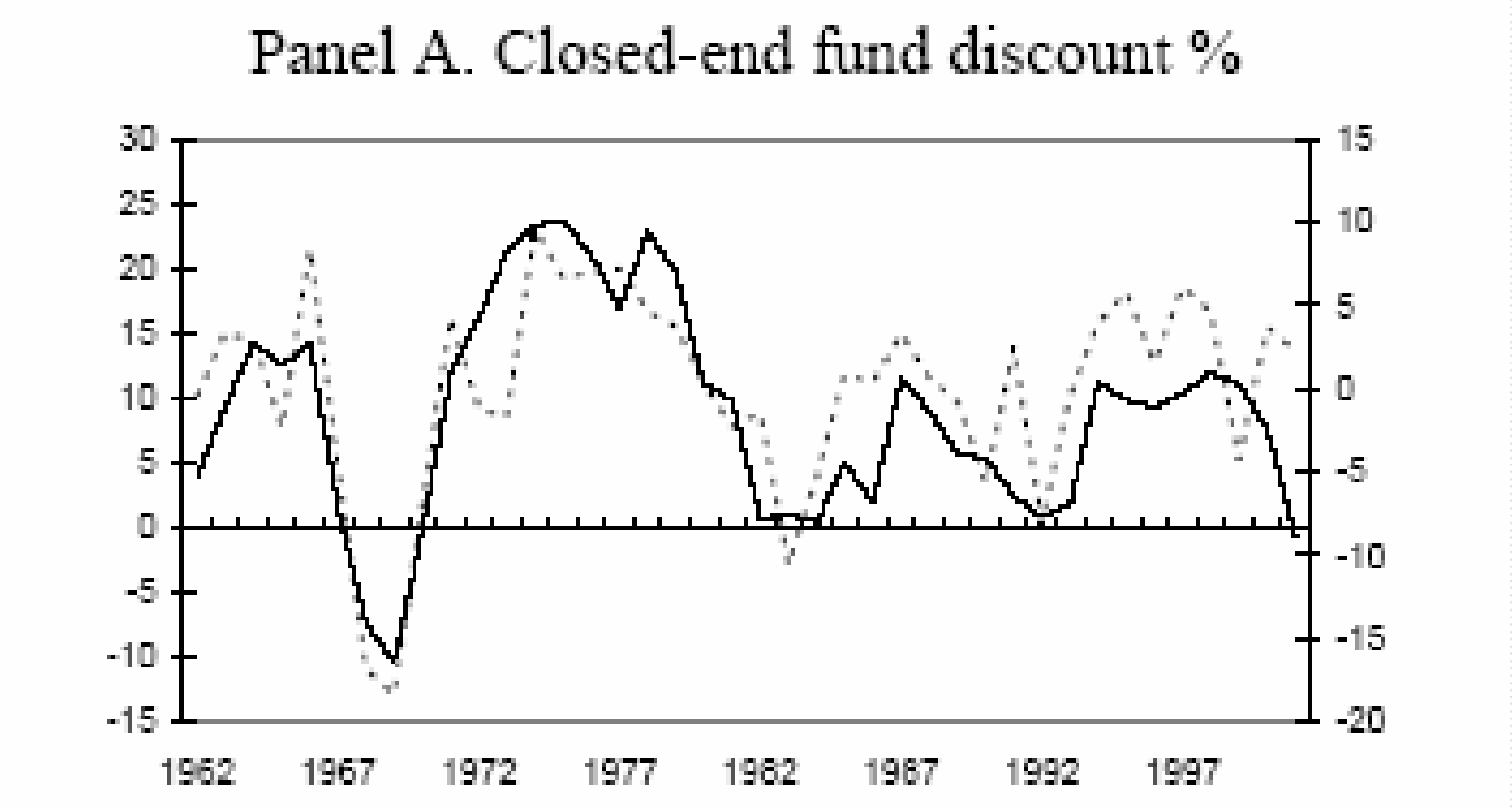


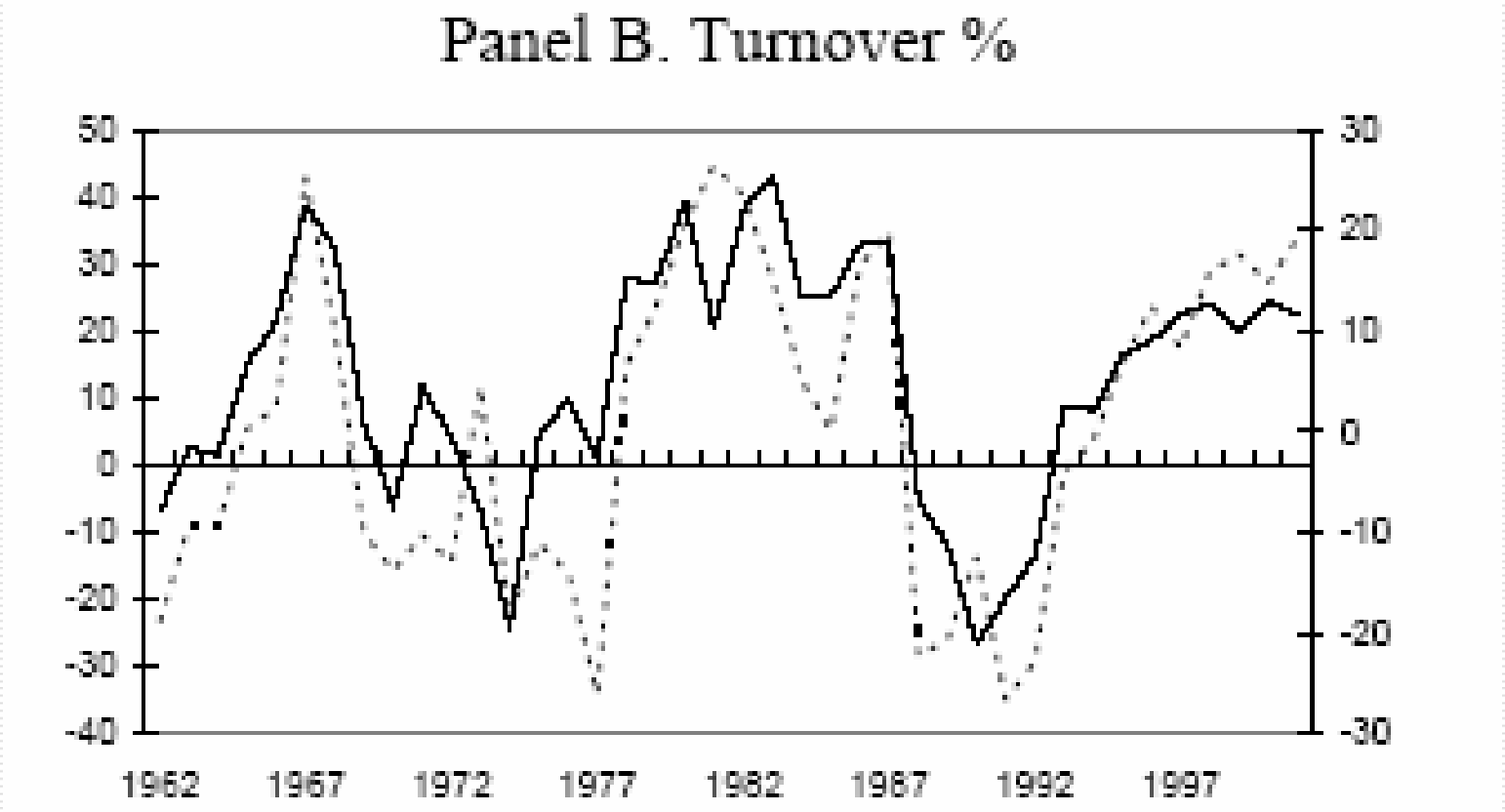

Figure 1: **Annual Returns of HH-LL Strategy (all size quintiles), 1964-1997**

# Baker and Wurgler, JoF 2006




Should closed end funds sell at a discount at all?

# Baker and Wurgler, JoF 2006



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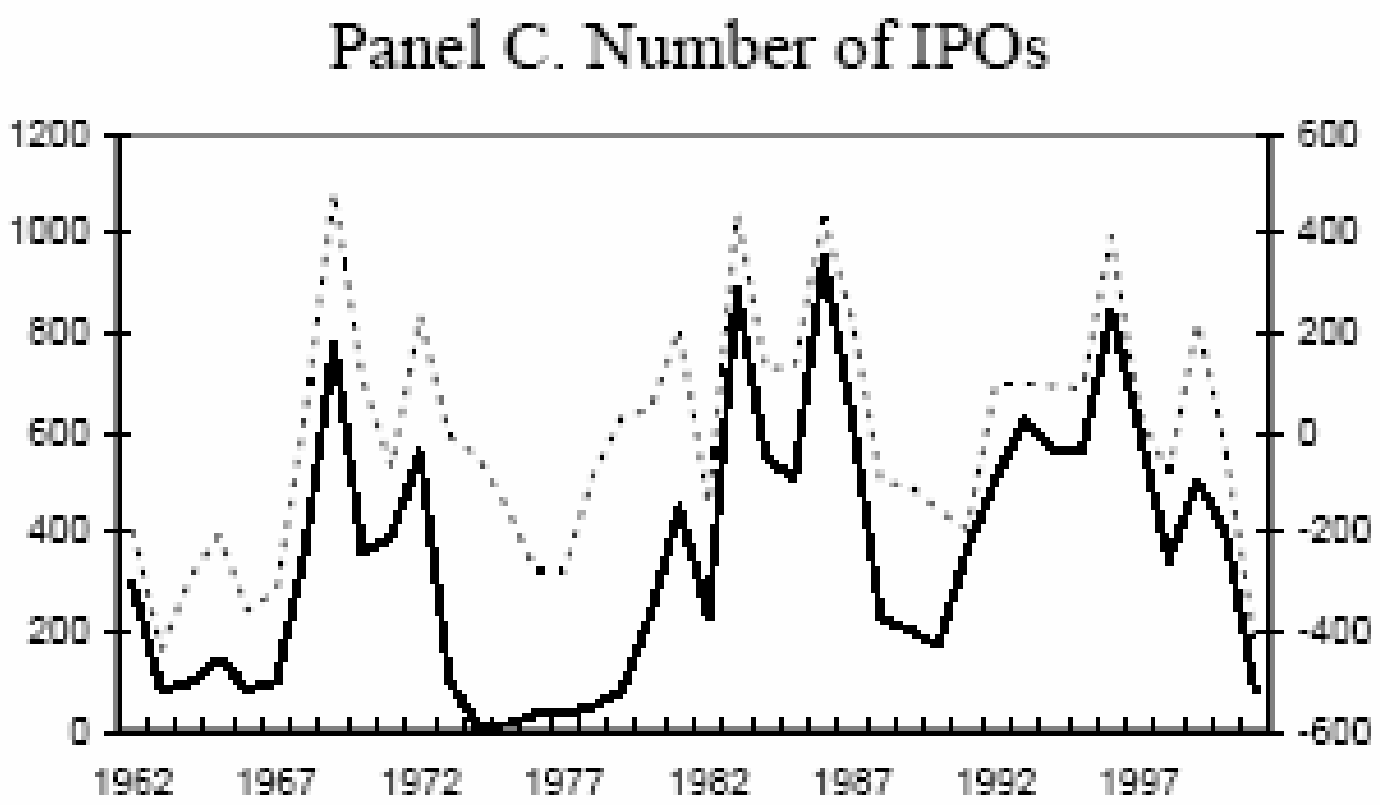

# Lakonishok et al, JoF 1994

| | Glamour | | | | | | | | | Value |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | | | | | Panel A: $B/M$ | | | | | |
| $R_1$ | 0.110 | 0.117 | 0.135 | 0.123 | 0.131 | 0.154 | 0.154 | 0.170 | 0.183 | 0.173 |
| $R_2$ | 0.079 | 0.107 | 0.140 | 0.145 | 0.153 | 0.156 | 0.169 | 0.164 | 0.182 | 0.188 |
| $R_3$ | 0.107 | 0.132 | 0.155 | 0.167 | 0.165 | 0.172 | 0.191 | 0.207 | 0.196 | 0.204 |
| $R_4$ | 0.081 | 0.133 | 0.136 | 0.160 | 0.170 | 0.169 | 0.188 | 0.204 | 0.213 | 0.207 |
| $R_5$ | 0.088 | 0.137 | 0.163 | 0.175 | 0.171 | 0.176 | 0.216 | 0.201 | 0.206 | 0.215 |
| $AR$ | 0.093 | 0.125 | 0.146 | 0.154 | 0.158 | 0.166 | 0.184 | 0.189 | 0.196 | 0.198 |

Ri = Return in year i after portfolio formation

AR = Average return over all five years

# Lakonishok et al, JoF 1994

Panel B: $C/P$

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| $R_1$ | 0.084 | 0.124 | 0.140 | 0.140 | 0.153 | 0.148 | 0.157 | 0.178 | 0.183 | 0.183 |
| $R_2$ | 0.067 | 0.108 | 0.126 | 0.153 | 0.156 | 0.170 | 0.177 | 0.180 | 0.183 | 0.190 |
| $R_3$ | 0.096 | 0.133 | 0.153 | 0.172 | 0.170 | 0.191 | 0.191 | 0.202 | 0.193 | 0.204 |
| $R_4$ | 0.098 | 0.111 | 0.146 | 0.159 | 0.166 | 0.172 | 0.182 | 0.192 | 0.223 | 0.218 |
| $R_5$ | 0.108 | 0.134 | 0.161 | 0.162 | 0.187 | 0.177 | 0.191 | 0.209 | 0.212 | 0.208 |
| $AR$ | 0.091 | 0.122 | 0.145 | 0.157 | 0.166 | 0.171 | 0.180 | 0.192 | 0.199 | 0.201 |

Ri = Return in year i after portfolio formation

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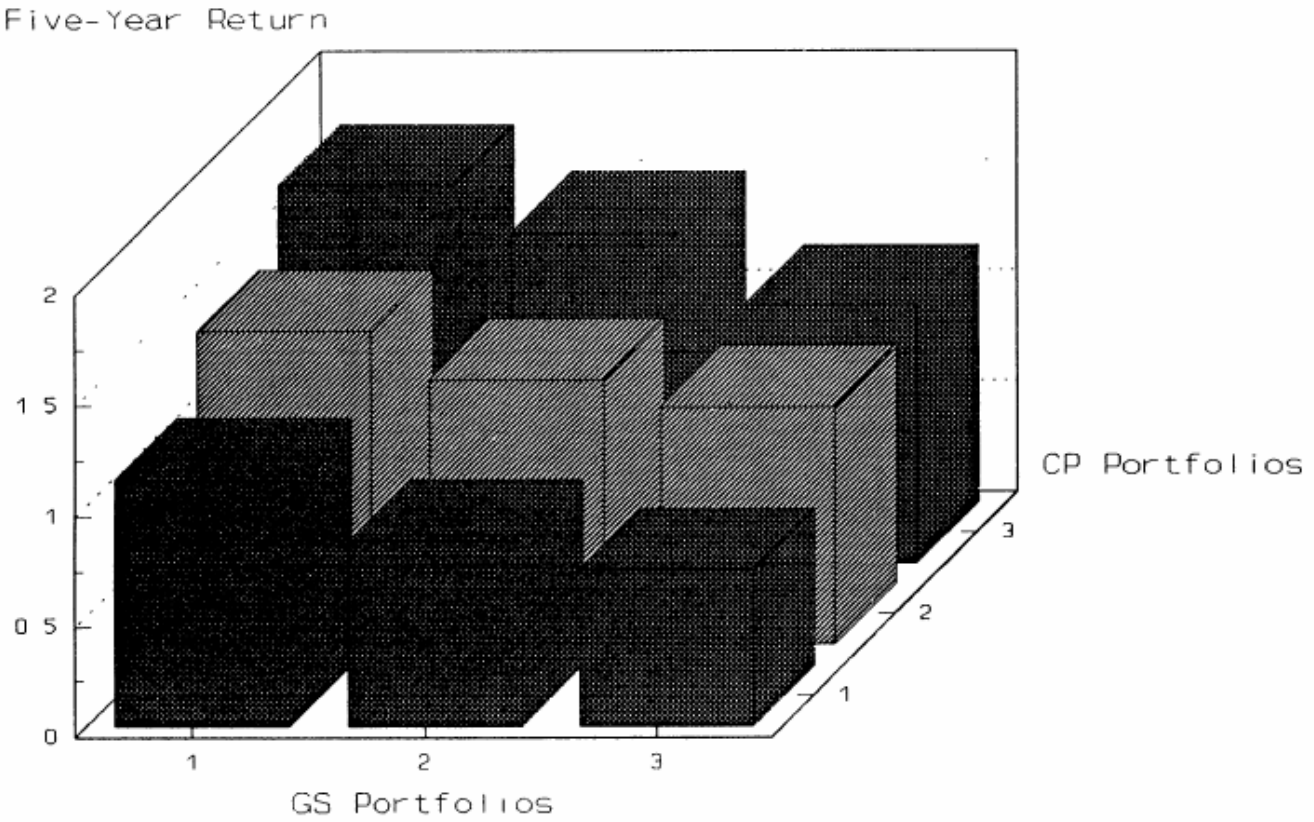



**Figure 1. Compounded 5-year return for portfolios formed on the basis of *C / P* and *GS*.** At the end of each April between 1968 and 1989, 9 groups of stocks are formed. The stocks are independently sorted in ascending order into 3 groups ((1) bottom 30 percent, (2) middle 40 percent, and (3) top 30 percent) based on each of two variables: cash-flow-to-price ($C/P$) and growth-in-sales ($GS$). Returns presented are compounded 5-year postformation returns assuming annual rebalancing for these 9 portfolios.

# Lakonishok et al, JoF 1994

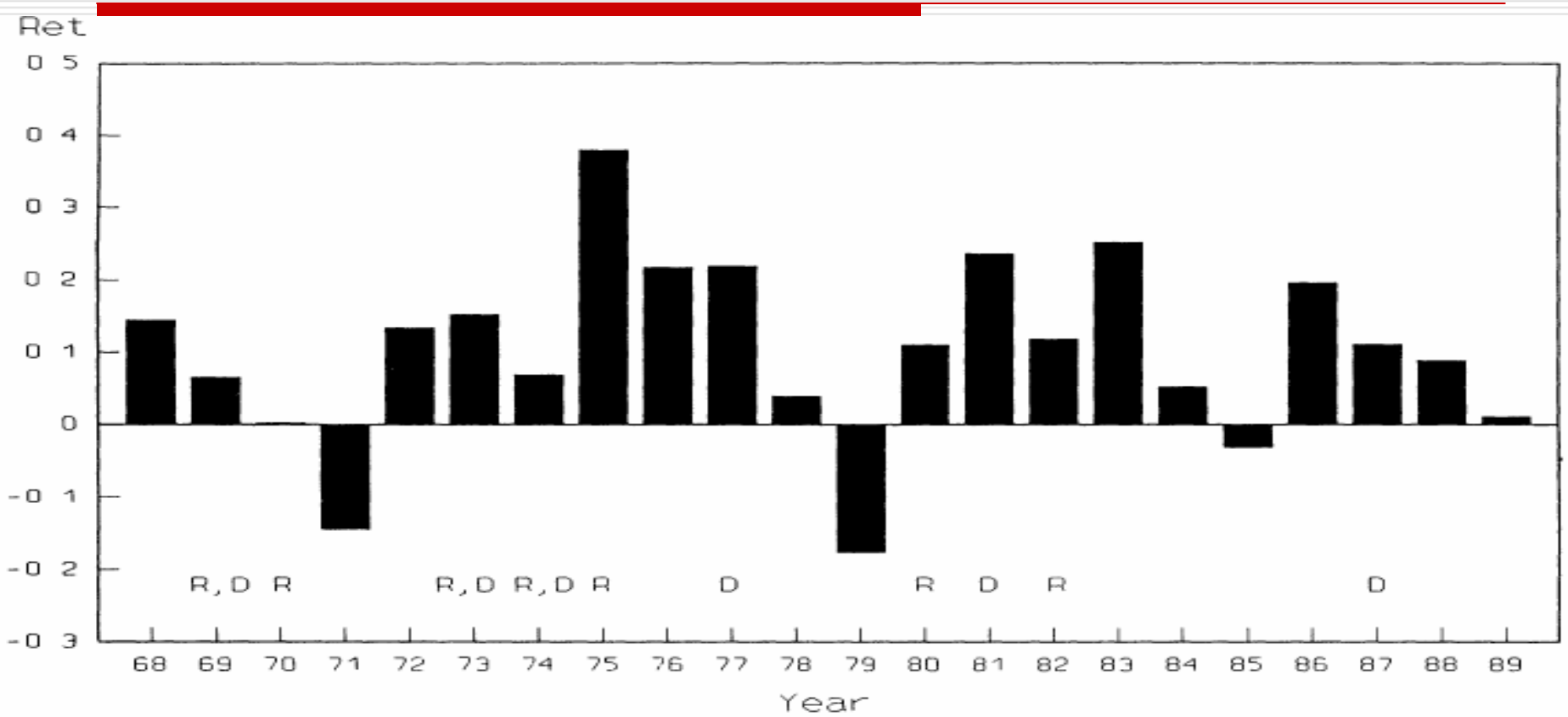



**Figure 2. Year-by-year returns: Value minus glamour.** At the end of each April between 1968 and 1989, 9 groups of stocks are formed. The stocks are independently sorted in ascending order into 3 groups ((1) bottom 30 percent, (2) middle 40 percent, and (3) top 30 percent) based on each of two variables: cash-flow-to-price ($C/P$) and growth-in-sales ($GS$). The value portfolio consists of those stocks in the highest $C/P$ groups and the lowest $GS$ group. The glamour portfolio consists of those stocks in the lowest $C/P$ group and the highest $GS$ group. The numbers presented are annual buy-and-hold returns for the value portfolio minus returns for the glamour portfolio. Annual buy-and-hold returns are calculated beginning at the end of April for the given year. $R$ indicates NBER recession years, and $D$ indicates years in which the CRSP equally weighted index declined in nominal terms.

# Systematic Biases

- Institutional
  - Herding – (why?)
  - Window Dressing ?
- Individual
  - Loss Aversion and Narrow Framing
  - Overweighting more recent history
  - Self attribution

# Loss Aversion Example

- You get $1000 plus choice of one of the following:
  - (a) $1000 with prob 0.5 and $0 with prob 0.5
  - (b) $500 for sure
    - Most choose (b)
- You get $2000 plus choice of one of the following:
  - (c) Loss of $1000 with prob 0.5 and $0 with prob 0.5
  - (d) Loss of $500 for sure
    - Most choose (c)
- How do you explain this phenomenon?

# Summary of Search

- Look systematically for undervaluation
  - Low M/B, P/E, Growth; Low returns; Institutional psychology; ...
  - Obscure; Undesirable; Supply/Demand imbalance (liquidity)
  - Value
  - Review
  - Risk Control and Management

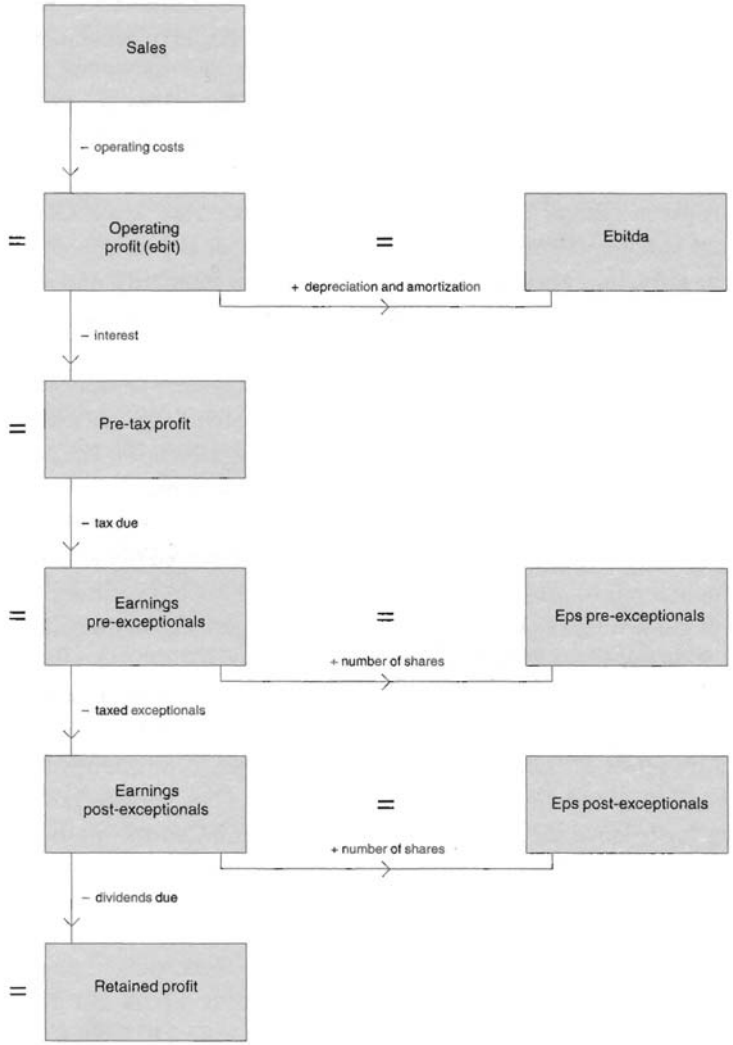
# Summary of Search

- Look systematically for undervaluation
  - Low M/B, P/E, Growth; Low returns; Institutional psychology; ...
  - Obscure; Undesirable; Supply/Demand imbalance (liquidity)
  - Value
  - Review
  - Risk Control and Management

# Valuation Approaches -- Multiples

- Cashflow measure ×Multiple
  - Cashflow Measures
    - Earnings (Maint Inv = Depr + A)
    - EBIT (Maint Inv = Depr + A, T = 0)
    - EBITA (Maint Inv = Depr)
    - EBITDA (Maint Inv = 0)
  - Multiple depends on
    - Cost of capital (risk)
    - Growth
    - Economic conditions (affects through risk and growth)
    - Cyclical situations (determines adjustments for cashflow)
    - Leverage (affects risk)
    - Management quality (winner's curse in forecasting cashflow)
  - Range of Error: Can be 100% or more

# Accounting Definitions



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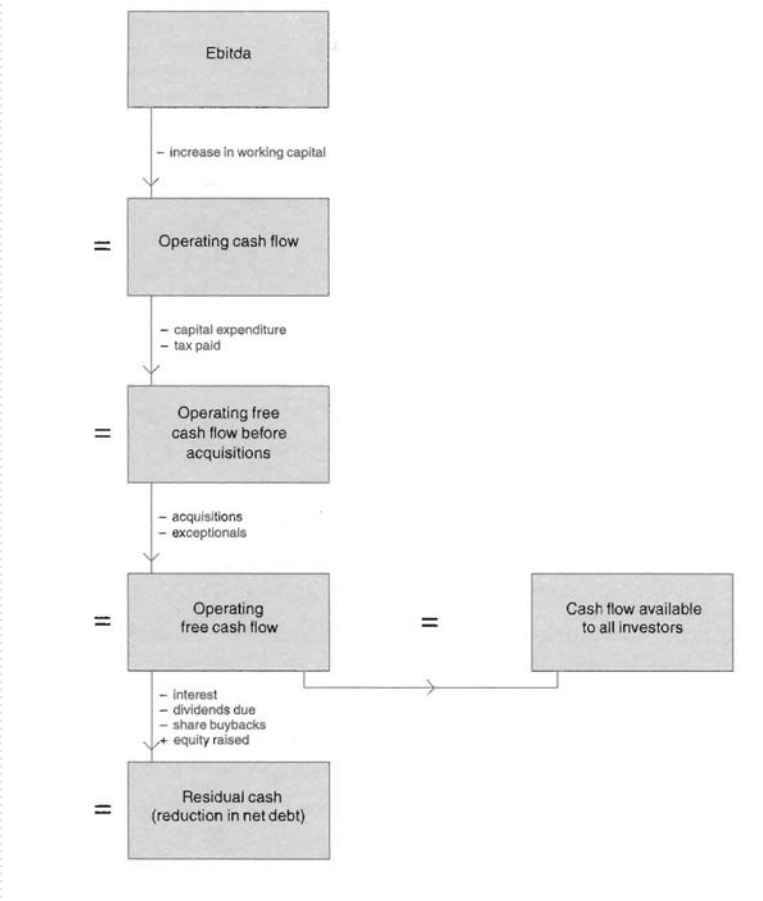


# Valuation Approaches -- NPV

- Value = $CF_0 + CF_1/(1+R) + CF_2/(1+R)^2 + ..+ TV_T/(1+R)^T$
- NPV analysis theoretically valid by definition
- In Practice:
  - Need to take a number of factors in arriving at forecasts of CF and TV
  - Need to forecast
    - Revenues, Margins, Required Investments, to get Cashflows
  - Need to take into account
    - Market size, Market share, Market growth, Prices/Costs, Technology, Management quality, ..
    - Consumer behavior, Competitor behavior, Cost pressure,...
  - Need to estimate the cost of capital
  - To get NPV
    - Can be different from Market Value

# Index to Stocks

**Prices quoted are those at the close of the market, January 12, 2005.**
All shares are traded on the New York Stock Exchange except where noted.

**PAGE NUMBERS**
**Bold type refers to Ratings and Reports;**
*italics to Selection & Opinion*

| PAGE NUMBERS | NAME OF STOCK | | Ticker Symbol | Recent Price | RANKS: Timeliness | Safety | Technical | Beta | 3-5 year Target Price Range and % appreciation potential | Current P/E Ratio | % Est'd Yield next 12 mos. | Est'd Earns. 12 mos. to 6-30-05 | (f) Est'd Div'd next 12 mos. | Industry Rank | LATEST RESULTS: Qtr. Ended | Earns. Per sh. | Year Ago | Qtr. Ended | Latest Div'd | Year Ago | Do Options Trade? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **544** | **AAR Corp.** | AIR | **11.65** | **2** | **4** | **2** | 1.65 | 15- 25 (30-115%) | **25.9** | **NIL** | .45 | NIL | **28** | 11/30 | **.10** | .03 | 12/31 | NIL | NIL | YES |
| 684 | **322** | ABM Industries Inc. | ABM | **18.41** | **4** | **2** | **3** | .75 | 25- 35 (35- 90%) | **18.4** | **2.3** | 1.00 | .42 | **44** | 10/31 | **.29** | .26 | 3/31 | ▲.105 | .10 | YES |
| 1152 | **585** | ACE Limited | ACE | **42.76** | **4** | **3** | **3** | 1.50 | 55- 80 (30- 85%) | **13.5** | **2.0** | 3.16 | .84 | **43** | 9/30 | **.07** | 1.08 | 3/31 | .21 | .19 | YES |
| | **961** | ACM Income Fund | ACG | **8.18** | **3** | **3** | **3** | .45 | 6- 10 (N- 20%) | **NMF** | **9.2** | NMF | .75 | **22** | 6/30 | **7.82(q)** | 8.64(q) | 12/31 | .18 | .203 | |
| 686 | **743** | ADC Telecom. (NDQ) | ADCT | **2.38** | **2** | **4** | **2** | 1.50 | 3- 6 (25-150%) | **34.0** | **NIL** | .07 | NIL | **37** | 10/31 | **.02** | .01 | 12/31 | NIL | NIL | YES |
| | **975** | AES Corp. | AES | **13.31** | **3** | **5** | **3** | 1.90 | 11- 20 (N- 50%) | **17.5** | **NIL** | .76 | NIL | **88** | 9/30 | **.20** | .10 | 12/31 | NIL | NIL | YES |
| | **1202** | AFLAC Inc. | AFL | **39.91** | **3** | **2** | **3** | .95 | 55- 75 (40- 90%) | **16.0** | **1.0** | 2.50 | .38 | **47** | 9/30 | **.58** | .47 | 12/31 | .095 | .08 | YES |
| | **1333** | AGCO Corp. | AG | **20.12** | **1** | **3** | **3** | 1.00 | 25- 40 (25-100%) | **11.1** | **NIL** | 1.82 | NIL | **45** | 9/30 | **.38** | .22 | 12/31 | NIL | NIL | YES |
| | **460** | AGL Resources | ATG | **32.25** | **4** | **2** | **3** | .80 | 30- 40 (N- 25%) | **14.9** | **3.6** | 2.16 | 1.16 | **97** | 9/30 | **.31** | .27 | 12/31 | .29 | .28 | YES |
| | **1415** | AK Steel Holding | AKS | **13.12** | **1** | **4** | **2** | 1.30 | 16- 25 (20- 90%) | **8.2** | **NIL** | 1.60 | NIL | **11** | 9/30 | **.63** | d.82 | 12/31 | NIL | NIL | YES |
| | **1286** | AMN Healthcare | AHS | **14.50** | **3** | **3** | **3** | 1.25 | ▼18- 25 (25- 70%) | **26.4** | **NIL** | .55 | NIL | **61** | 9/30 | **.13** | .22 | 12/31 | NIL | NIL | YES |
| | **254** | AMR Corp. | AMR | **8.63** | **3** | **5** | **3** | 2.30 | 25- 50 (190-480%) | **NMF** | **NIL** | d5.47 | NIL | **38** | 9/30 | **d1.33** | d.15 | 12/31 | NIL | NIL | YES |
| | **1215** | ASA (Bermuda) Ltd. | ASA | **39.45** | **3** | **3** | **3** | .45 | 45- 55 (15- 40%) | **58.9** | **1.9** | .67 | .75 | **73** | 5/31 | **42.96(q)** | 36.22(q) | 12/31 | .10 | .35 | YES |
| | **721** | AT&T Corp. | T | **18.64** | **3** | **3** | **3** | 1.25 | 25- 40 (35-115%) | **15.0** | **5.4** | 1.24 | 1.00 | **67** | 9/30 | **d.13** | .58 | 3/31 | .238 | .238 | YES |
| | **1608** | AT&T Wireless Serv. | AWE | | | | | SEE FINAL SUPPLEMENT | | PAGE 1608 | | | | | | | | | | | |
| | **1093** | ATMI, Inc. (NDQ) | ATMI | **22.83** | **3** | **4** | **4** | 1.60 | 30- 45 (30- 95%) | **30.9** | **NIL** | .74 | NIL | **66** | 9/30 | **.20** | d.13 | 12/31 | NIL | NIL | YES |
| | **1002** | AVX Corp. | AVX | **11.99** | **3** | **3** | **4** | 1.50 | 13- 19 (10- 60%) | **40.0** | **1.3** | .30 | .16 | **17** | 9/30 | **.11** | d.44 | 12/31 | .038 | .038 | YES |
| | **179** | Abbott Labs. | ABT | **46.93** | **4** | **1** | **2** | .80 | 55- 70 (15- 50%) | **19.6** | **2.2** | 2.39 | 1.04 | **52** | 9/30 | **.53** | .53 | 3/31 | .26 | .245 | YES |
| | **1709** | Abercrombie & Fitch | ANF | **49.65** | **2** | **3** | **5** | 1.10 | 45- 70 (N- 40%) | **20.5** | **1.0** | 2.42 | .50 | **71** | 10/31 | **.64** | .51 | 12/31 | .125 | NIL | YES |
| | **360** | Aberdeen Australia Fd. (ASE) | IAF | **10.99** | **3** | **3** | **3** | .75 | 11- 17 (N- 55%) | **NMF** | **2.3** | NMF | .25 | **29** | 10/31 | **10.64(q)** | 9.38(q) | 3/31 | .25 | .065 | |

# Valuation Approaches – NPV, cont..

- Shortcomings of the approach!
  - NPV is the sum of
    - Good/Precise estimates of
      - $CF_0 + CF_1/(1+R)$
    - Bad/Imprecise estimates of
      - $CF_2/(1+R)^2 + .. + TV_T/(1+R)^T$
  - Combining Precise and Imprecise information reduces the precision of the overall estimate
    - Imprecise part is typically the larger component of NPV
- $TV_T = CF_{T+1} \times$ multiple
  - Multiple = 1/(r-g)
  - R = 0.1, g = .05 => Multiple = 25
  - R = 0.1, g = 0.04 => Multiple = 20

# Valuation Approaches – NPV, cont..

- Sensitivity Analysis
  - Can it help improve the precision?
    - Not much if it is based on difficult to forecast parameters that covary in complex ways
    - Cost of capital; profit margins; growth; investment that is required – interact in a complex way

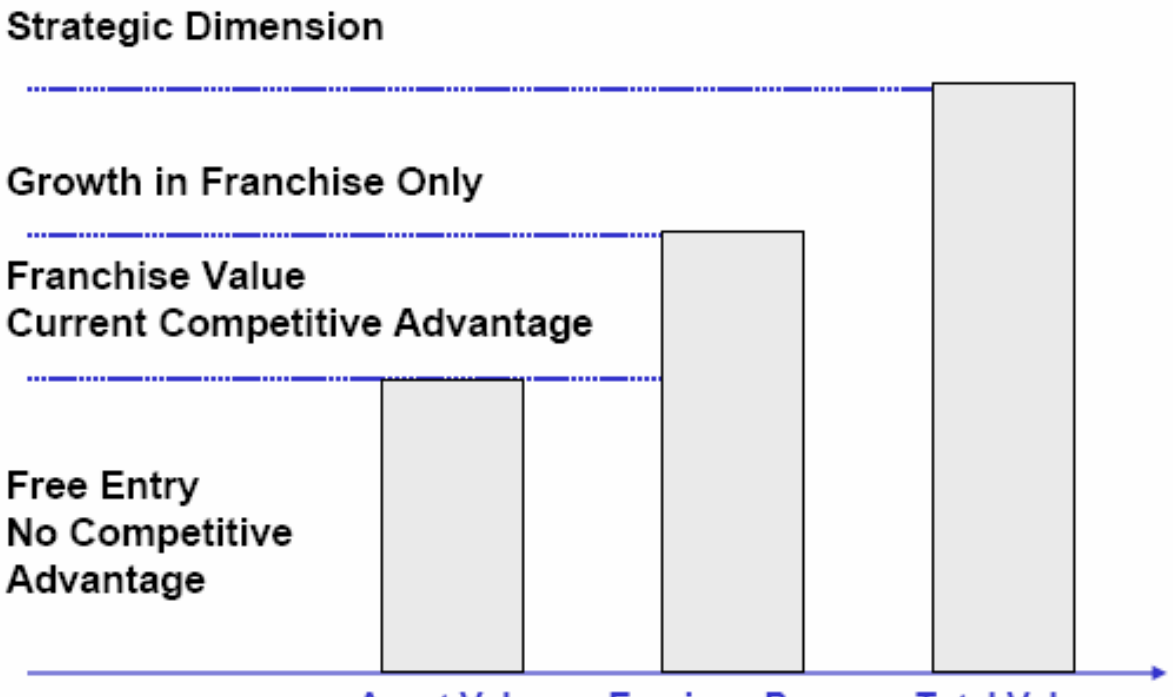
# Valuation Assumptions

- Traditional (considered reasonable baseline)
  - Profit rate, 6%
  - Cost of capital, 10%
  - Investment/Sales, 60%
  - Growth rate, 6% of sales, profits
- Strategic
  - Industry is economically viable
  - Entry is free, no “incumbant advantage”
  - Firm enjoys sustainable competitive advantage
  - Competitive advantage is stable, firm grows with the industry

# Valuation: Basic Approach

- Know your circle of competence
  - Organize your "Valuation" components by Reliability
    - Most reliable ➔ Least reliable
  - Organize your "Valuation" components by underlying strategic assumption
    - No competitive advantage ➔ Growing competitive advantage

# Valuation: Three Elements




| Reliability Dimension | Asset Value | Earnings Power Value | Total Value |
|---|---|---|---|
| | • Tangible<br>• Balance Sheet Based<br>• No Extrapolation | • Current Earnings<br>• Extrapolation<br>• No Forecast | • Includes Growth<br>• Extrapolation<br>• Forecast |

# Industry Entry - Exit

| Industry | Market Value | Net Asset Value | Entry |
|---|---|---|---|
| Chemicals | $2B | $1B | Yes (P ↓ MV ↓) |
| *(Allied)* | $1.5B | $1B | Yes |
| | $1.0B | $1B | Stop |
| Automobiles | $40B | $25B | Yes (Sales ↓ MV↓) |
| *(Ford)* | $30B | $25B | Yes |
| | $25B | $25B | Stop |
| Internet | $10B | $0.010B | ? |

# Asset Value Graham & Dodd: Fictional

very conservative

| Assets | 1998 | % Realized | Value |
|---|---|---|---|
| C.A. | | | |
| Cash | 150 | 100 | 150 |
| Mkt sec | 25 | 100 | 25 |
| Acct rec | 1,667 | 85 | 1,417 |
| Inv | 2,324 | 50 | 1,164 |
| Total C.A | 4,170 | | 2,756 |
| PPE, net | 7,500 | 45 | 3,375 |
| Goodwill | 2,250 | 0 | 0 |
| Def Tax | 150 | 0 | 0 |
| Total Assets | 14,070 | | 6,131 |

# Reproduction Value, How much to get into a business? Less conservative

| Assets | Book Value | Adj to get Rep Cost |
|---|---|---|
| Current Assets | | |
| Cash | 2,250 | None |
| Marketable securities | 6,750 | None |
| Accts rec – net | 31,250 | Add bad debt allowance |
| Inventories | 25,000 | Add last in, first out reserve |
| Prepaid expenses | 5,900 | None |
| Deferred taxes | 4,250 | Discount to PV |
| Total current assets | 75,400 | |
| Property, Plant, Eqpmt | 54,000 | Original Cost + Adj |
| Goodwill | 26,250 | Relate to Product/R&D |
| Total Assets | 155,650 | |

# Goodwill, R&D, Advertising…

- How much R&D expenditure to create a technology
  - How many years of R&D to get to the product?
- Boeing
  - Product life span, say 15 years
  - May have to spend about 15 years of R&D
    - 50% to 60% of a year's sales to get the product
- Drugs
  - Product life span, say 5 years
    - Clock starts to tick before product is available
    - Almost a year of sales to get the product

# Goodwill, R&D, Advertising…

- Customer relationships even more costly!
  - New business does not start with a full orderbook
- How do you value?
  - Price for similar rights in the market
    - Cost to acquire a subscriber
    - Cost to get a stadium seat

# R&D Spending of major firms

% of sales

| Firm | 1997 | 1998 |
|---|---|---|
| Boeing | 4.2 | 3.4 |
| Cisco | 18.7 | 19.1 |
| Coca-Cola | 1.7 | 1.5 |
| Eli Lily | 16.2 | 18.8 |
| General Electric | 1.7 | 1.5 |
| IBM | 5.5 | 5.5 |
| Merck | 7.1 | 10.7 |
| Microsoft | 16.9 | 17.3 |
| Pfizer | 15.4 | 16.8 |
| | | |

# Asset Value

| Assets | Basic Graham-Dodd Value | Reproduction Value |
|---|---|---|
| Cash | Book | Book |
| Accounts Receivable | Book | Book + Allowance |
| Inventories | Book | Book + LIFO |
| PPE | 0 | Orig Cost ± Adj |
| Product Portfolio | 0 | Years R & D |
| Customer Relationships | 0 | Year SGA |
| Organization | 0 | |
| Licenses, Franchises | 0 | Private Mkt. Value |
| Subsidiaries | 0 | Private Mkt. Value |
| **Liabilities** | | |
| A/P, AT, AL | Book | Book |
| Debt | Book | Fair Market |
| Def Tax, Reserves | Book | DCF |
| **Bottom Line** | Net Net Wk Cap | Net Repro Value |

# Margin of Safety

- Suppose Asset Value (less CL)
  - = $100 mil
  - Market value of debt
    - = $80 mil
  - Value of equity
    - = $20 mil
  - Suppose we are off by 10% in our estimate of asset value
    - Equity value off by $10 mil, i.e., 50%
- Alternative
  - Suppose we can buy the firm (debt plus equity) for $70 mil
  - Enterprise (asset) value is $100 mil
  - Margin of safety, 30%

# Asset Value

| Approach | Graham | Book | Reproduction |
|---|---|---|---|
| **Opportunities** | None | Limited | More Extended |
| **Value in Practice** | Yes | Yes | Yes |
| **Industry Knowledge** | None | None | Extensive |
| **Stability/Reliability** | High | Low | Intermediate |
| **Goodwill** | 0 | Historical | Reproduction |
| **Debt** | Book *(Low Debt)* | Book *(0 Enterprise)* | Est Market *(0 Enterprise)* |

# Asset Value Issues

- **Management**
  - Good adds value
  - Bad subtracts value
- **Private Market Values**
  - Potentially highly unstable (EBITDA multiples of Internet subs)
- **Reproduction vs. Book**
  - Better where accountants misestimate
    - Tech trends
    - Real estate
    - Intangibles
  - M/B indicator close to M/Repro value
  - Improvement requires discipline
- **Non Viable Industries**
  - Value = Zero (except NWC)

# Asset Value Risk Management:

## Will you ever realize the asset value? What are the risks?

| | |
|---|---|
| • Private biases | • Personal computer industry<br>• Psychological experiments<br>• Evidence of investment behavior in life |
| • Catalysts | • Takeover<br>• Reorganization<br>• Management change |
| • Importance of industry knowledge | • If don't know, don't play (Circle of Competence) |
| • Hedging | • Limited |

# Asset Value Risk Management

Ultimately, "Margin of Safety" is risk management tool

(Otherwise diversify)

# Earning Power Value

- Basic Concept
  - Enterprise Value based on this year's "Earnings"
- Measurement
  - EP value = Earnings/cost of capital
- Second most reliable information
  - Earnings today
- Calculation
  - Earnings = Acct Income + Adj
  - Cost of Capital = WACC (Enterprise Value)
  - Equity Value = EP Value – Debt
- Assumption
  - Current profitability is sustainable

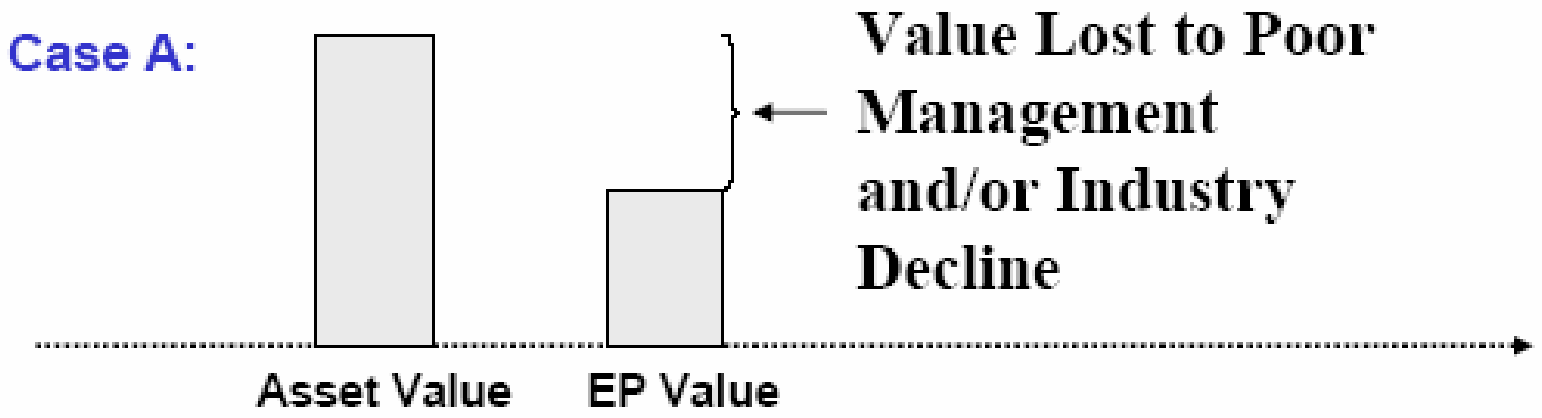
# Earning Power Value Adjustments

- Earnings = EBIT (financial statements)
  - PLUS One time charge adjustment
    - If charges before tax average 20% of EBIT during past 5 years, then reduce EBIT by 20%
  - MINUS Cyclical adjustment
    - Calculate peak-to-trough EBIT variation – say Average is 80% of Peak, then if Peak, subtract 20%
  -

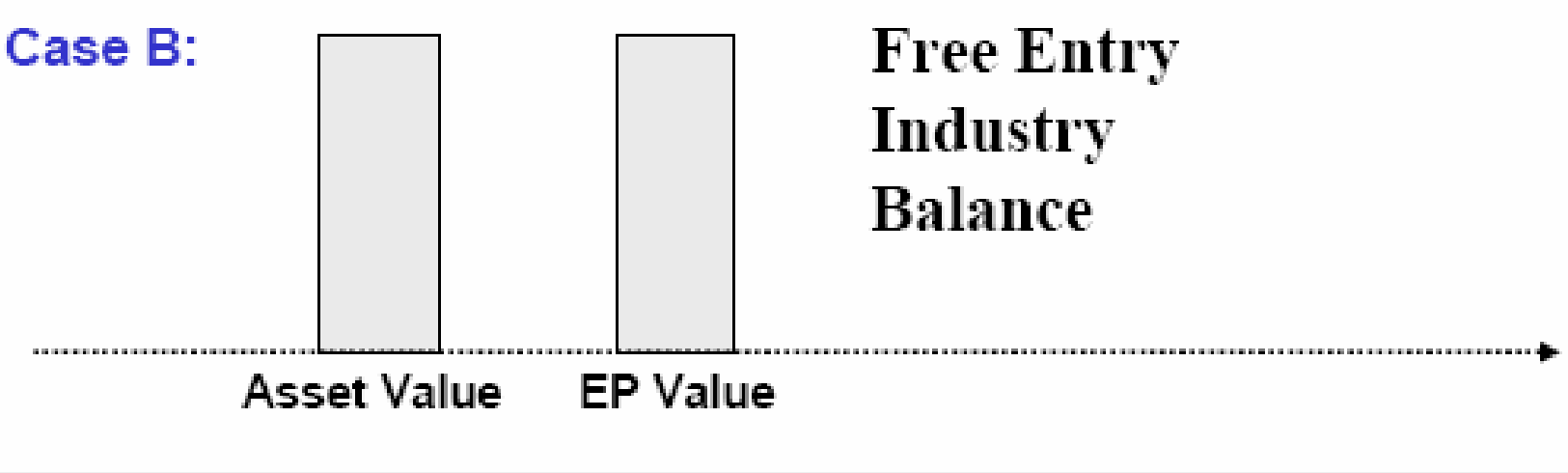
# Earning Power Value Adjustments..

- Minus Tax adjustment
  - Apply average tax rate to EBIT – debt tax shield already in WACC
- Plus Depreciation adjustment
  - Depr + Amort – Zero growth CAPEX
- Plus Subsidiary Earnings Adjustments
- Plus Other Adjustments
  - Temporary problems, unused pricing power etc…

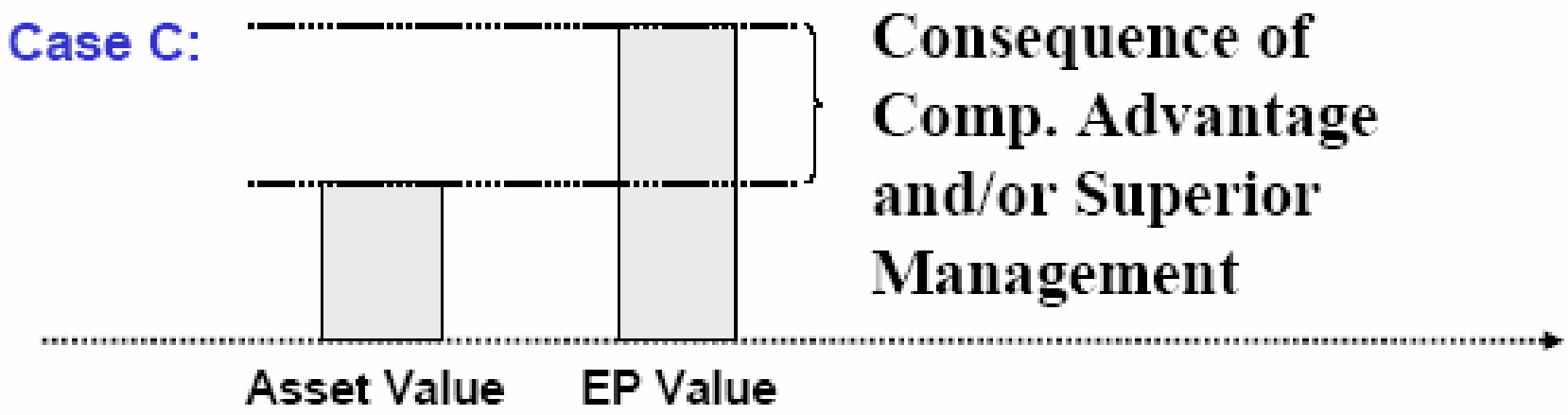
# Earning Power and Entry/Exit



# Earning Power and Entry/Exit…



# Earning Power and Entry/Exit…




"Sustainability" depends on Continuing Barriers-to-Entry

# Earning Power and Entry/Exit…

## Franchise Value Calculation

(A1) Cost of Capital = 10%

(A2) Asset Value "AV" = 1200M

(A3) Earnings Power Value = 2400M = 240M X (1 / 10%)
"Earnings"

# Earning Power and Entry/Exit…

- Competitive Free Entry Earnings
  - $120 M
    - = Cost of Capital × Asset Value
    - =10% × 1200
- Franchise Earnings
  - $120 M
  - = Earnings – Free Entry Earnings
  - = $240 M – $120 M
- Source of Franchise Earnings
  - Suppose Earnings = 10% of Sales
    - Franchise Earnings is another 10% of Sales
    - ➔ Requires Pricing or Cost Advantage!
    - Is it sustainable??

# Earning Power Value Issues

- Nature and sustainability of barriers-to-entry
- Sustainable management quality
- Quality of reinvestment opportunities
- Inflation

# Summary – Basic Valuation

Compute: Asset Value (Most reliable)
EP Value (Second most reliable)

| | | | |
|---|---|---|---|
| Case A: | Asset Value ≥ EP Value<br>(500M) (300M) | Value = EP Value<br>+ Catalyst Value |
| Case B: | Asset Value = EP Value<br>(500M) (500M) | Value = 500M |
| Case C: | Asset Value ≤ EP Value<br>(500M) (1000M) | Value = Asset Value<br>+ Sustainable Fraction of Franchise Value (1000M-500M) |