

Quantitative Investing, Life Lessons, and Crisis of Crowding

Ludwig B. Chincardini, Ph.D., CFA

IndexIQ

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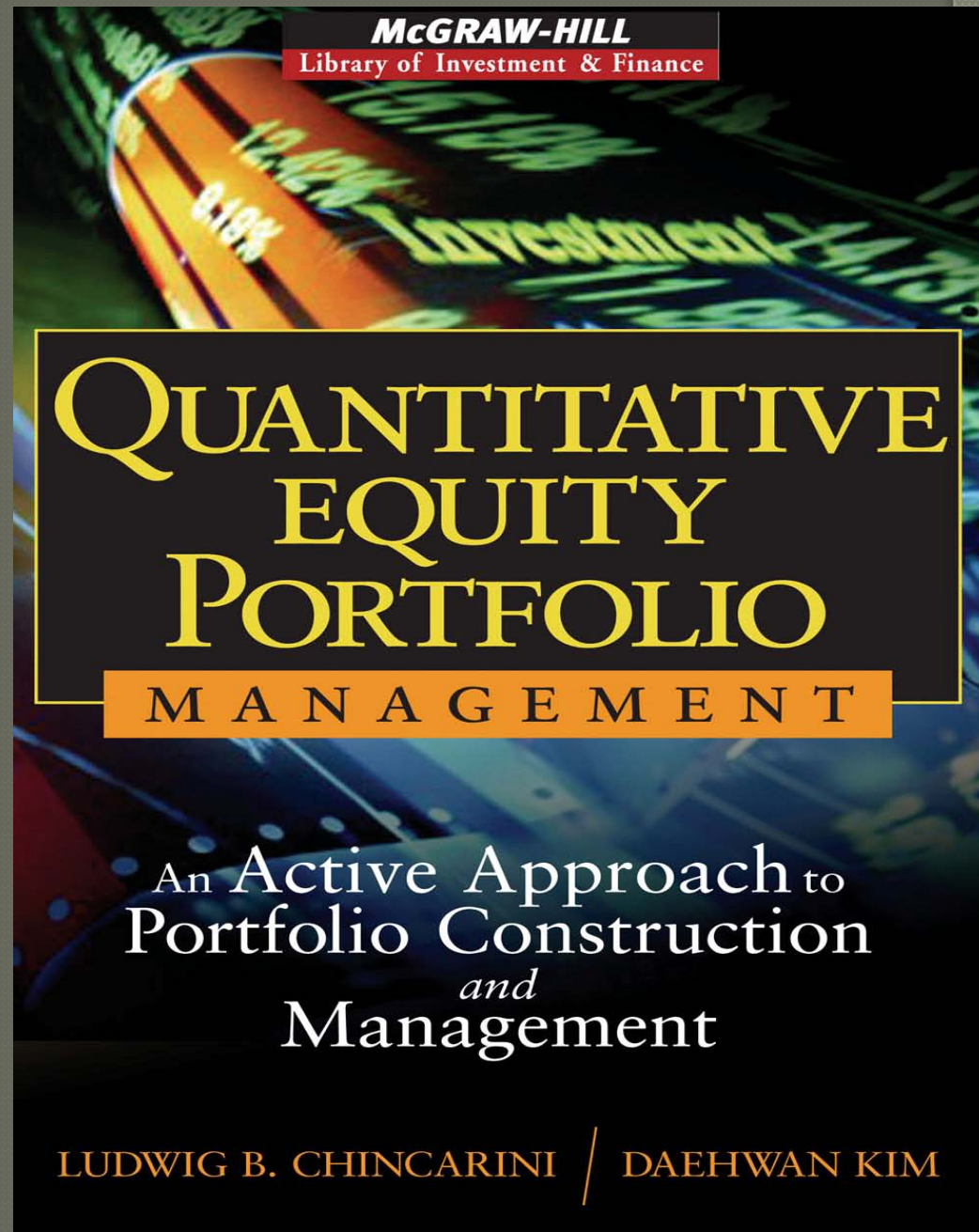
Presentation for Pitzer Student Investment Committee

Outline

1. Basics of Quant Investing
2. The Quant Crisis of 2007 (from my new book *The Crisis of Crowding*)
3. Quant Investing in the Future
4. Career Lessons and Career Advice

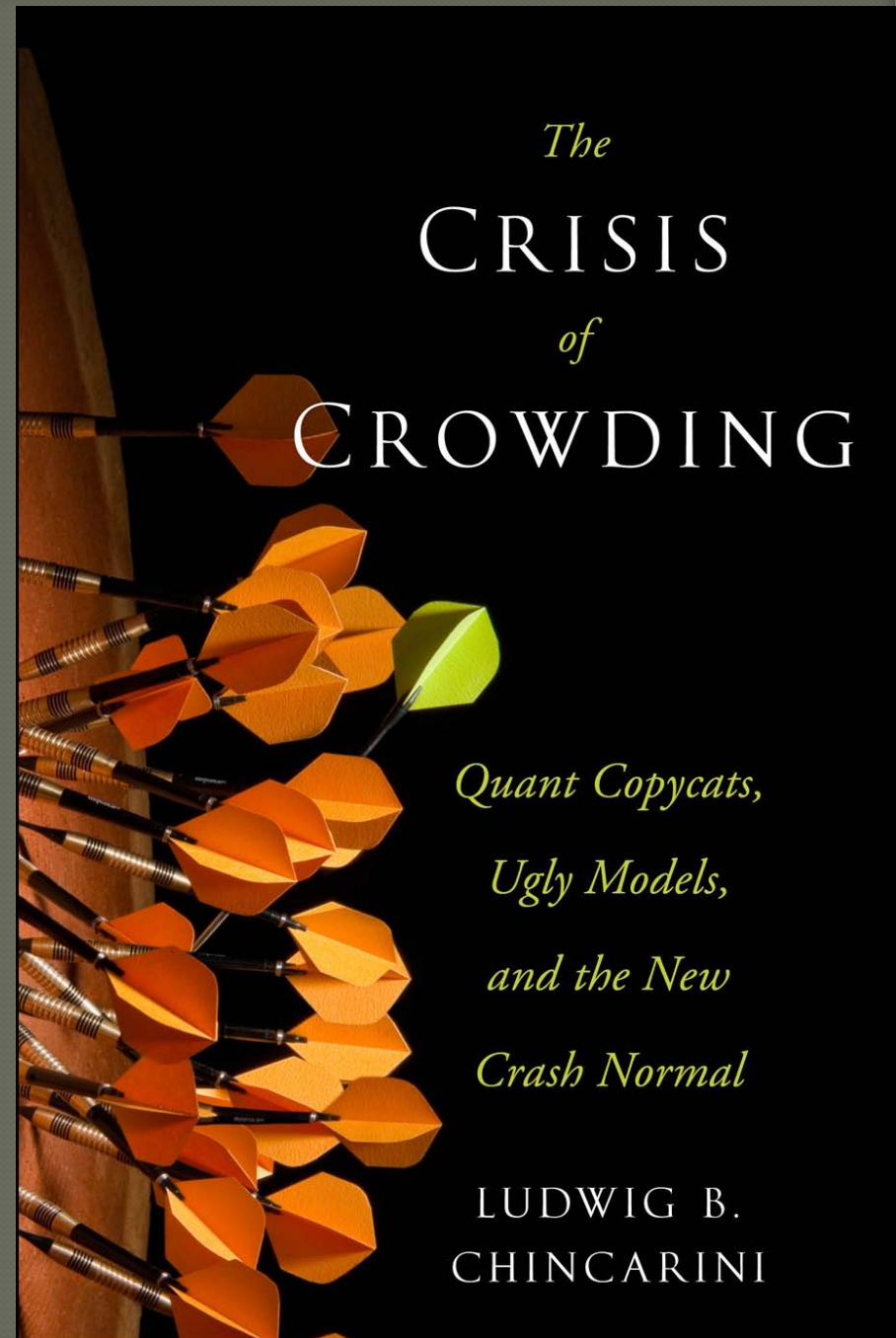
Book for Future Quants

- The standard in QEPM.
- *Available on Amazon.*



New Book

- New dazzling book on the financial crisis:
- ***The Crisis of Crowding***
- Available for Pre-Order on Amazon.



Basics of Quant Investing

A. Qualitative vs. Quantitative

Definitions:

Qualitative: Portfolio managers focus on intangibles and generally do not use computers, mathematics, or statistics to differentiate between the “good” and the “bad” stocks.

Quantitative: Portfolio managers use mathematics, statistics to model and forecast security returns. Quantifiable data is used in these models, such as macroeconomic data, fundamental stock data, etc. These models are run through computer programs to identify the “good” and “bad” stocks. *Information is filtered mathematically rather than intuitively.*

Basics of Quant Investing

A. Qualitative vs. Quantitative

| Advantages | | |
|--------------------------|------|-------------|
| Criteria | QEPM | Qualitative |
| Objectivity | High | Low |
| Breadth | High | Low |
| Behavioral Errors | Low | High |
| Replicability | High | Low |
| Costs | Low | High |
| Controlled Risk | High | Low |
| Disadvantages | | |
| Criteria | QEPM | Qualitative |
| Qualitative Inputs | Low | High |
| Historical Data Reliance | High | Low |
| Data Mining | High | Low |
| Reactivity | Low | High |

Basics of Quant Investing

B. Profit from Anomalies, Behavioral Biases, and Institutional Constraints

1. Value Premium
2. Small-Cap Premium
3. January Effect
4. Earnings Surprise Premium
5. Neglected Firm Effect
6. Index Inclusion Effects

Basics of Quant Investing

B. Profit from Anomalies, Behavioral Biases, and Institutional Constraints

1. Ambiguity Aversion (restaurants, etc)
2. Confirmation Bias
3. Disposition Effect
4. Illusion of Knowledge

Basics of Quant Investing

c. Basic Models

Steps in Forming a Model and Making a Portfolio

1. Choose factors
2. Choose the data
3. Determine factor exposures
4. Determine factor premia
5. Determine expected Return and Risk
6. Forecast
7. Weight the portfolio

$$r_i = \alpha_i + \beta_{i1}f_1 + \dots + \beta_{iK}f_K + \epsilon_i$$

Basics of Quant Investing

C. Basic Models

TABLE 16.12

Results of Factor Analysis from 1989–1994

| Factor | Obs. | Beg. Period | End Period | $\hat{\beta}$ | t-Stat | r_{z1} | t-Stat |
|--|------|-------------|------------|---------------|--------|----------|--------|
| Technical—Price Based | | | | | | | |
| 40. Bollinger band (BB) | 60 | Dec 1989 | Nov 1994 | −1.404 | −4.310 | −0.599 | −2.633 |
| 41. One-month momentum (M1M) | 60 | Dec 1989 | Nov 1994 | −7.259 | −3.945 | −1.265 | −2.541 |
| 42. Three-month momentum (M3M) | 60 | Dec 1989 | Nov 1994 | −2.332 | −2.635 | −0.752 | −1.343 |
| 43. Twelve-month momentum (M12M) | 60 | Dec 1989 | Nov 1994 | −0.083 | −0.375 | 0.173 | 0.263 |
| 44. Price (P) | 60 | Dec 1989 | Nov 1994 | 0.000 | 0.260 | −3.460 | −5.489 |
| 45. Relative strength index (RSI) | 60 | Dec 1989 | Nov 1994 | −0.015 | −1.935 | −0.581 | −2.865 |
| Technical—Volume Based | | | | | | | |
| 46. Volume (V) | 60 | Dec 1989 | Nov 1994 | −0.000 | −2.382 | −0.919 | −4.801 |
| Macroeconomic | | | | | | | |
| 47. GDP growth exposure (GDPG) | 60 | Dec 1989 | Nov 1994 | −10.491 | −1.122 | −0.773 | −1.362 |
| 48. GDP revision exposure (GDPFR) | 60 | Dec 1989 | Nov 1994 | −4.962 | −1.188 | −0.800 | −1.443 |
| 49. GDP surprise exposure (GDPFS) | 60 | Dec 1989 | Nov 1994 | −10.543 | −1.070 | −0.514 | −0.941 |
| 50. Industrial production exposure (IPG) | 60 | Dec 1989 | Nov 1994 | −4.515 | −0.828 | −0.736 | −1.312 |
| 51. IPG revision exposure (IPR) | 60 | Dec 1989 | Nov 1994 | −107.477 | −1.085 | −0.221 | −0.436 |
| 52. Consumption growth exposure (PCG) | 60 | Dec 1989 | Nov 1994 | −4.962 | −0.968 | −0.887 | −1.527 |
| 53. PCG revision exposure (PCGR) | 60 | Dec 1989 | Nov 1994 | 45.869 | 0.835 | −0.276 | −0.537 |
| 54. Unemployment exposure (UR) | 60 | Dec 1989 | Nov 1994 | −2.897 | −1.742 | −0.237 | −0.501 |
| 55. Change in unemployment exposure (URD) | 60 | Dec 1989 | Nov 1994 | −2.003 | −1.220 | −0.671 | −1.431 |
| 56. Inflation exposure (CPIG) | 60 | Dec 1989 | Nov 1994 | 2.101 | 0.735 | −0.004 | −0.007 |
| 57. Change in commodity index exposure (CIG) | 60 | Dec 1989 | Nov 1994 | 27.882 | 1.021 | 1.264 | 2.274 |
| 58. Consumer confidence exposure (CCG) | 60 | Dec 1989 | Nov 1994 | 74.221 | 1.004 | 0.139 | 0.235 |
| 59. Consumer sentiment exposure (CSG) | 60 | Dec 1989 | Nov 1994 | 55.301 | 1.451 | 0.379 | 0.599 |
| 60. Business confidence exposure (BSG) | 60 | Dec 1989 | Nov 1994 | −98.408 | −1.047 | −1.368 | −2.275 |

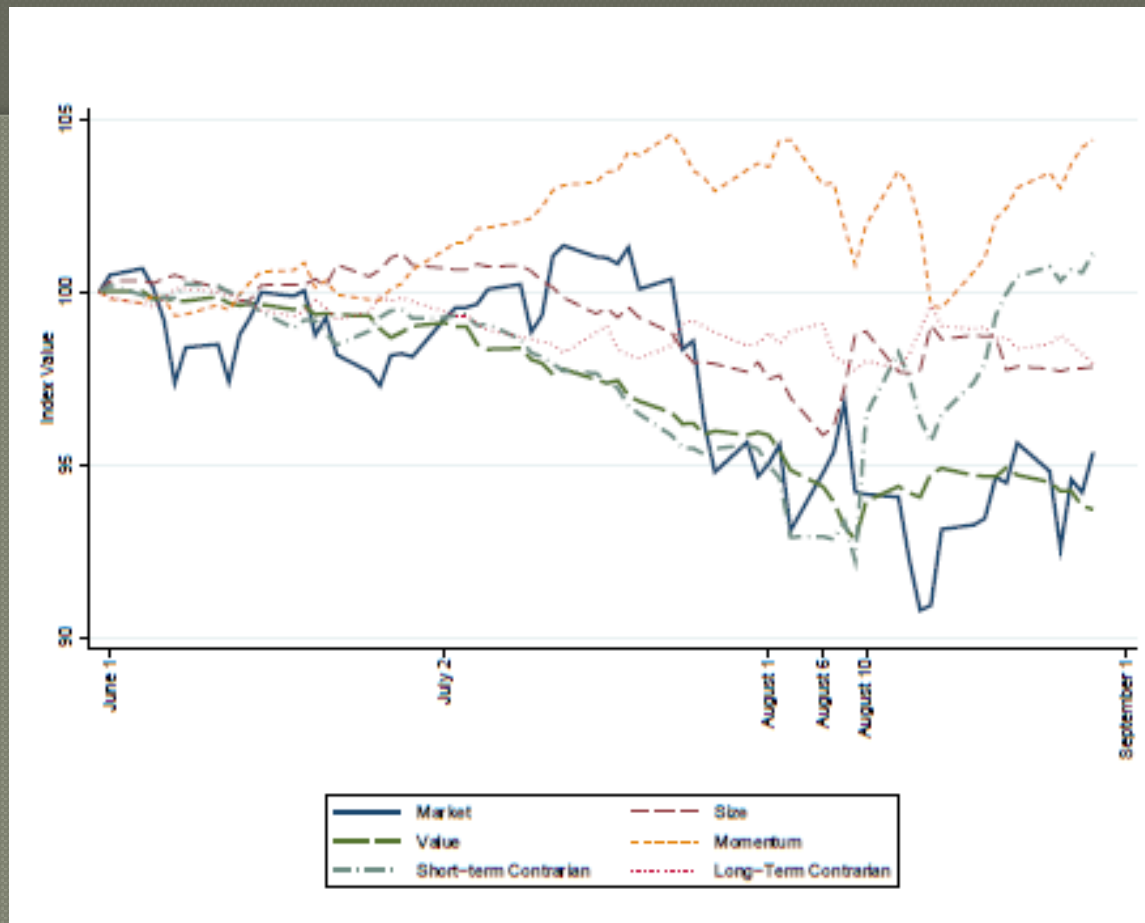
The Quant Crisis of 2007

A. What was it?

- In one week, quant factors move erratically.
- Many quant funds are leveraged and lose lots
- Margin calls force them to liquidate causing further losses – **crowds** at door at same time
- Many quant hedge funds failed

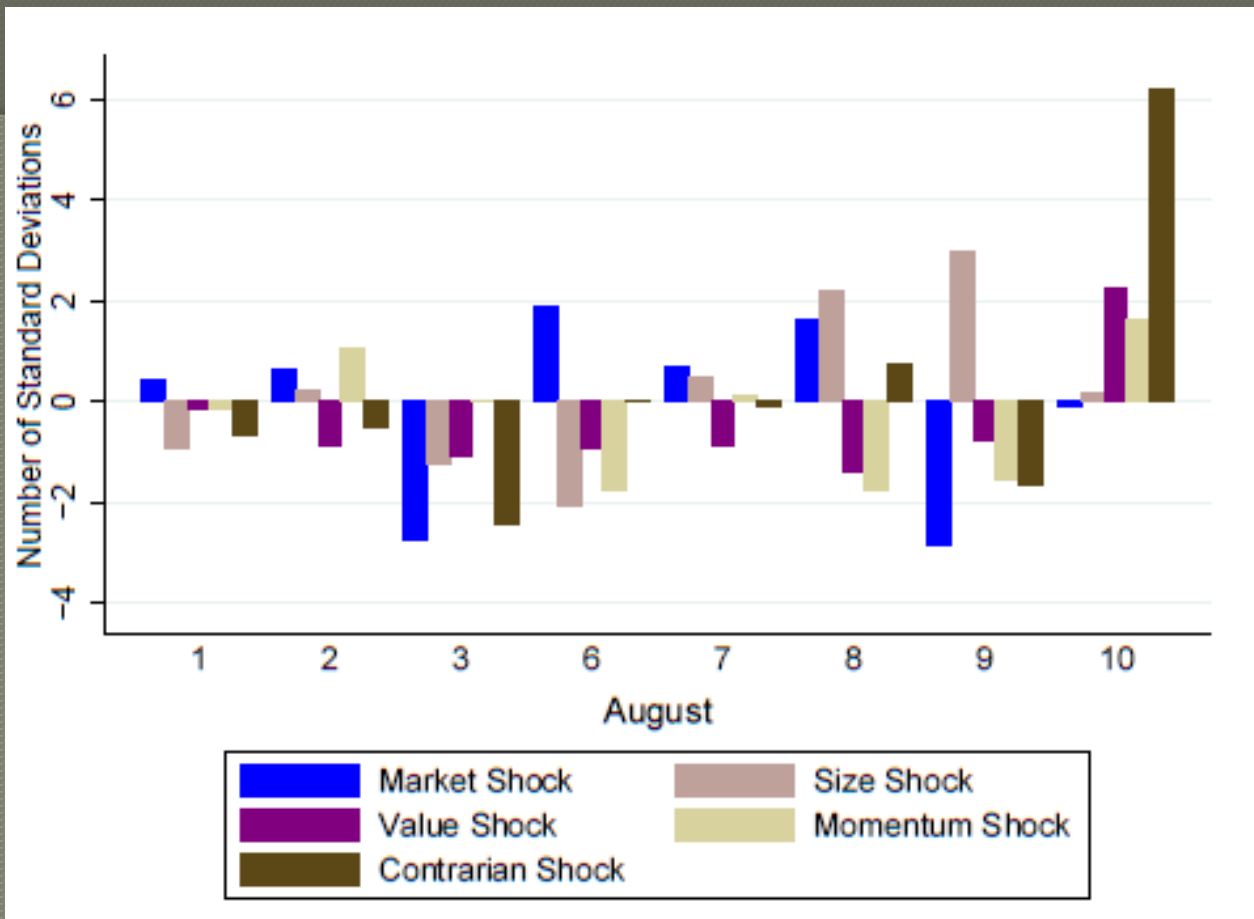
The Quant Crisis of 2007

A. What was it?



The Quant Crisis of 2007

A. What was it?



The Quant Crisis of 2007

A. What was it?

Probably the most important lesson was the magnitude of commonality in the investment approach we followed across the broader investment community. Success in quant investing in the future will hinge on developing unique ideas that are differential from competitors. The second lesson is that models and approaches need to be more dynamic. When evaluating long-term historical price patterns, it's hard to appreciate how quickly the models needed to evolve. Having lived through 2007 and 2008 — and the earlier LTCM crisis and the Internet bubble — I better appreciate the need for dynamic models that will have more variation in risk and signal composition. — Mark Carhart interview, April 23, 2010.

Quant Investing in the Future

A. Ideas

- Models that measure the crowdedness of the space
- More unique factor models
- Risk measures that consider the holders of securities
- Solid Counterparty provisions for severe situations

Career Lessons and Career Advice

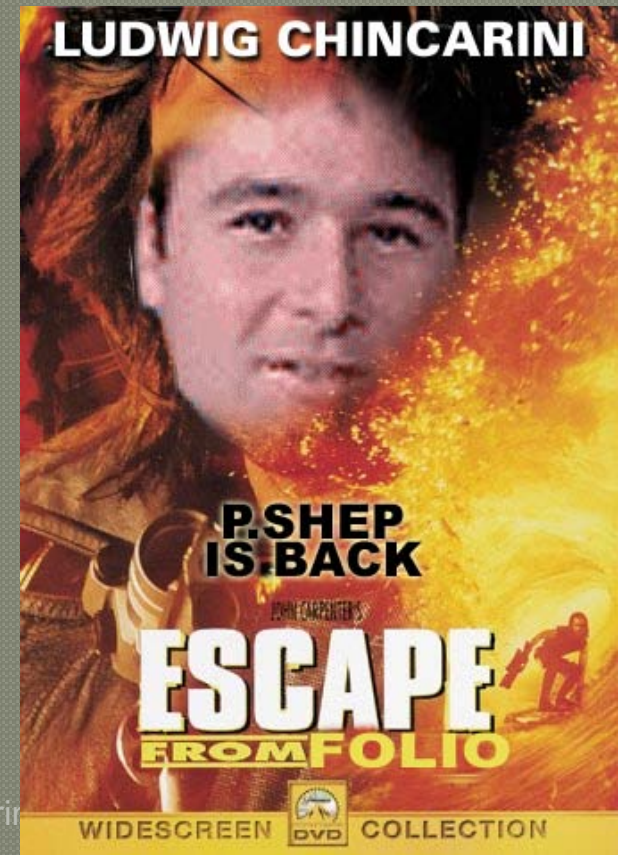
A. Introduction

- Do what you love.
- Be the first at work and the last to leave.
- Work with people that care about results not BS.
- Remember it's always uncertain and you may change roads several times.
- For being a quant, study lots of mathematics, finance, and statistics.
- Never stop learning, never stop working.

Career Lessons and Career Advice

B. A Sample Road of the Good, the Bad, and Ugly

1. Rock star?
2. Ph.D. or not?
3. Fischer Black and Goldman
4. Schroders
5. The Almost Bear Stearns job
6. The Almost Goldman job
7. The BIS
8. My own company
9. Rydex
10. The Almost n Others
11. Consulting for Hedge Funds
12. Teaching and Research
13. The Future???



Stock Picking Stories

- Good Guys
- Pixar
- Planet Hollywood
- ILOG

Thank you.

- E. And remember to buy my new book (you can order now on Amazon) and let everyone else know on Facebook etc.

