Georgia Institute of Technology

Computational Investing, Part I

022: Common Metrics for Hedge Funds

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Find out how modern electronic markets work, why stock prices change in the ways they do, and how computation can help our understanding of them. Learn to build algorithms and visualizations to inform investing practice.

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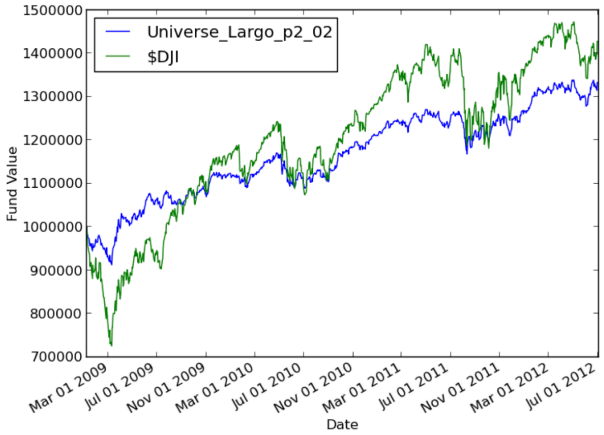
What are Investors Looking For?

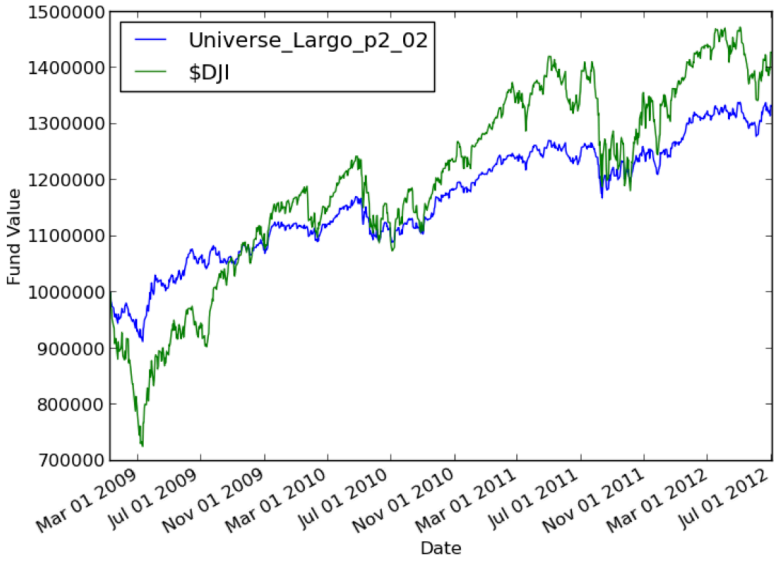
Common Metrics

- Annual return.
- Risk: Standard deviation of return.
- Risk: Draw down.
- Reward/Risk: Sharpe Ratio.
- Reward/Risk: Sortino Ratio.
- Jensen's Alpha.



Example

	Return	Sharpe	STDEV	D-down	Corr
Fund	33%	.94	0.58%	-8.67%	0.89
$DJI	43%	.63	1.23%	-27.38%	1.00



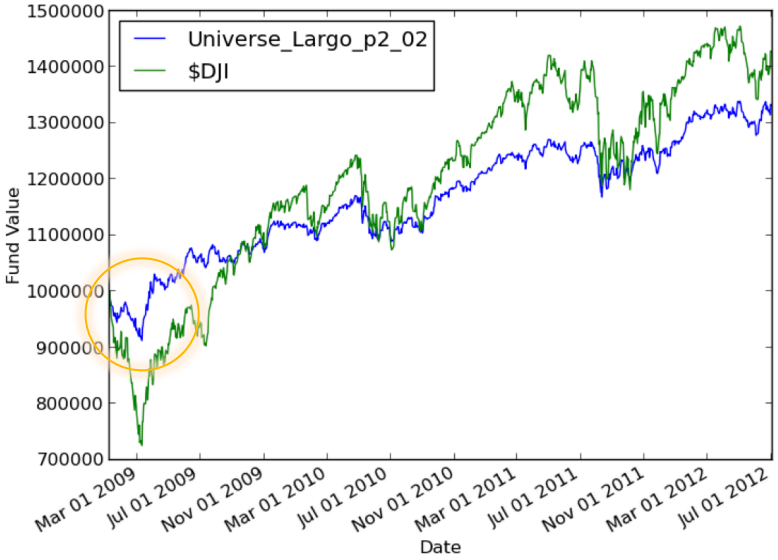
Annual Return

- metric = (value[end]/value[start]) – 1
- Example: $100 to $110:
  - (110/100) – 1 = 0.10 = 10%

Standard Deviation of Daily Return

- daily_rets[i] = (value[i]/value[i-1]) – 1
- std_metric = stdev(daily_rets)

Max Draw Down



Sharpe Ratio

$$S = \frac{E[R - R_f]}{\sigma} = \frac{E[R - R_f]}{\sqrt{\mathrm{var}[R - R_f]}},$$

- Reward/Risk = How much reward are you getting for your risk?
- metric = (average(daily_rets)/ stdev(daily_rets)) * sqrt(250)

Homework 1

- Find online broker to “paper trade.”
- Invest $1M in 4 equities.
- Assess your portfolio for 2011:
  - Annual return
  - Average daily return
  - Stdev of daily return
  - Sharpe Ratio
- Compare with benchmark: SPY
- Submit
  - .pdf printout of your spreadsheet.
  - Screenshot of your portfolio online.

Demo Using Excel