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**Preliminary Academic Research:  
Select Data Prepared for Empirical  
Finance, LLC**

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Empirical Finance, LLC (“Empirical”)

*Turning Academic Insights into Investment Performance.*<sup>TM</sup>

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# Performance Analysis—Overview

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## Inputs/Backtest Background

- Profit and Value Strategy
  - <http://blog.empiricalfinance.com/2011/02/the-other-side-of-value/>
  - Rank stocks on B/M (price), rank stocks on gross profits/total assets (quality)
  - Average ranks, long top 30, short bottom 30
  
- Magic Formula Strategy
  - **Little Book that Beats the Market by Joel Greenblatt**
  - Rank stocks on EBIT/TEV (price), rank stocks on EBIT/Capital (quality)
  - Average ranks, long top 30, short bottom 30
  
- No “Survivorship bias”—incorporated delisting information from CRSP filings according to the Price/Beaver 2007 algorithm (<http://richardp.rice.edu/research/delistings.sas>)
  
- No ADR, CEF, REITs, or TRUSTs
  
- No financials or utilities
  
- No “look ahead bias:” Calculate ranks on June 30<sup>th</sup> using annual data as of December 31 of year prior.
  - Hold portfolio through June 30<sup>th</sup> (1 year)
  
- Equal-weight initial portfolio (Starting July 1<sup>st</sup>)
  
- CRSP/Compustat
  
- VW\_CRSP=Value-weight index of all NYSE/AMEX/NASDAQ stocks
  
- EW\_CRSP=Equal-weight index of all NYSE/AMEX/NASDAQ stocks
  
- 7/1/1961 through 12/31/2010

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## Performance Analysis—Summary

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- Profit and Value > Magic Formula
  - ❑ Slight advantage
  
- Significant Risk
  - ❑ Drawdowns are extreme
  
- Long/Short systems
  - ❑ Hazardous to your wealth!

### Conclusion

- Long-only for quality and price systems



## Long Only

### Label Translation:

Pv.>20perc.EW.Long.30 → Profit and Value, all stocks >20% market cap NYSE breakpoint, Equal-Weight, Long, 30 stocks

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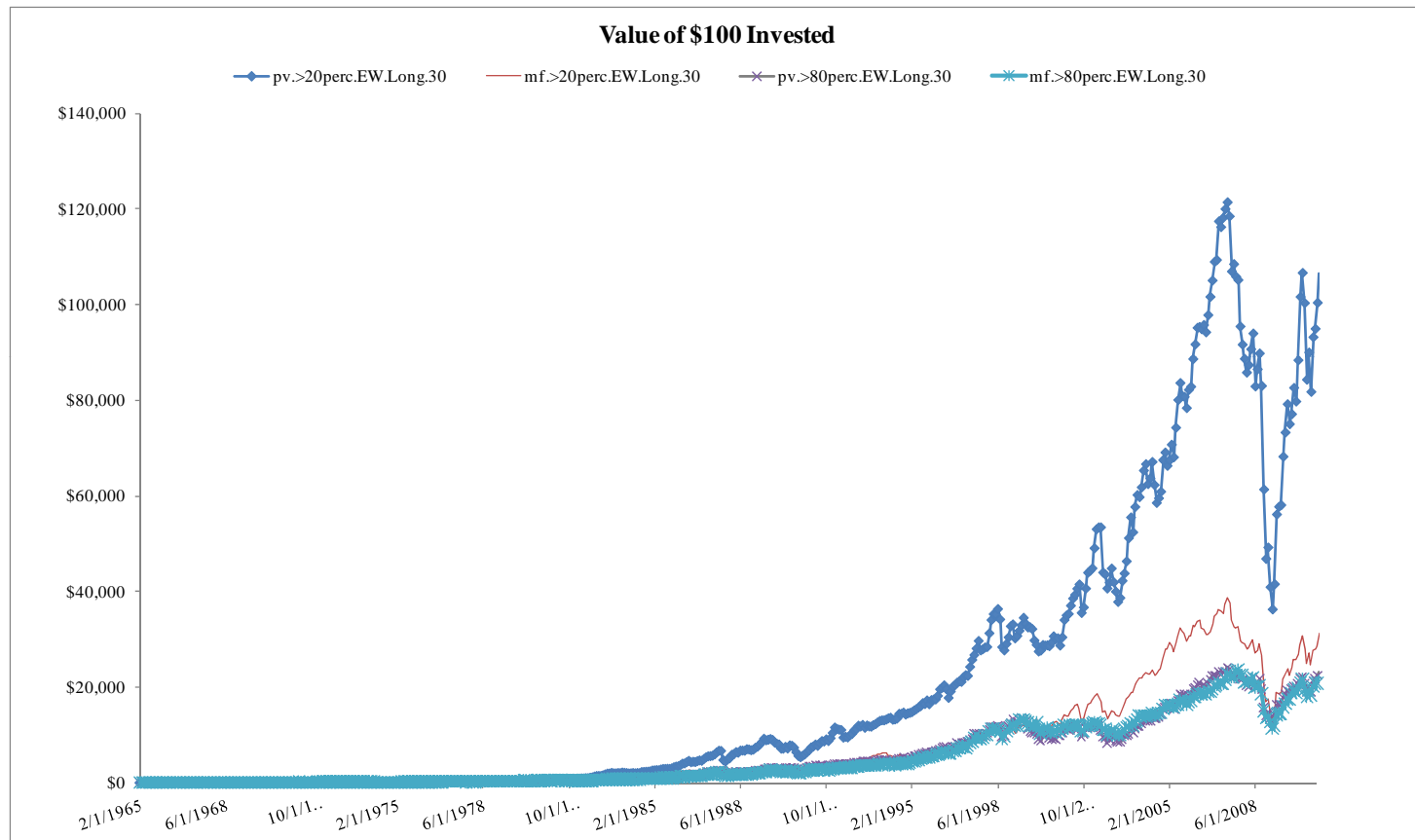
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# Performance Analysis—Overview

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➤ Profit and Value outperforms

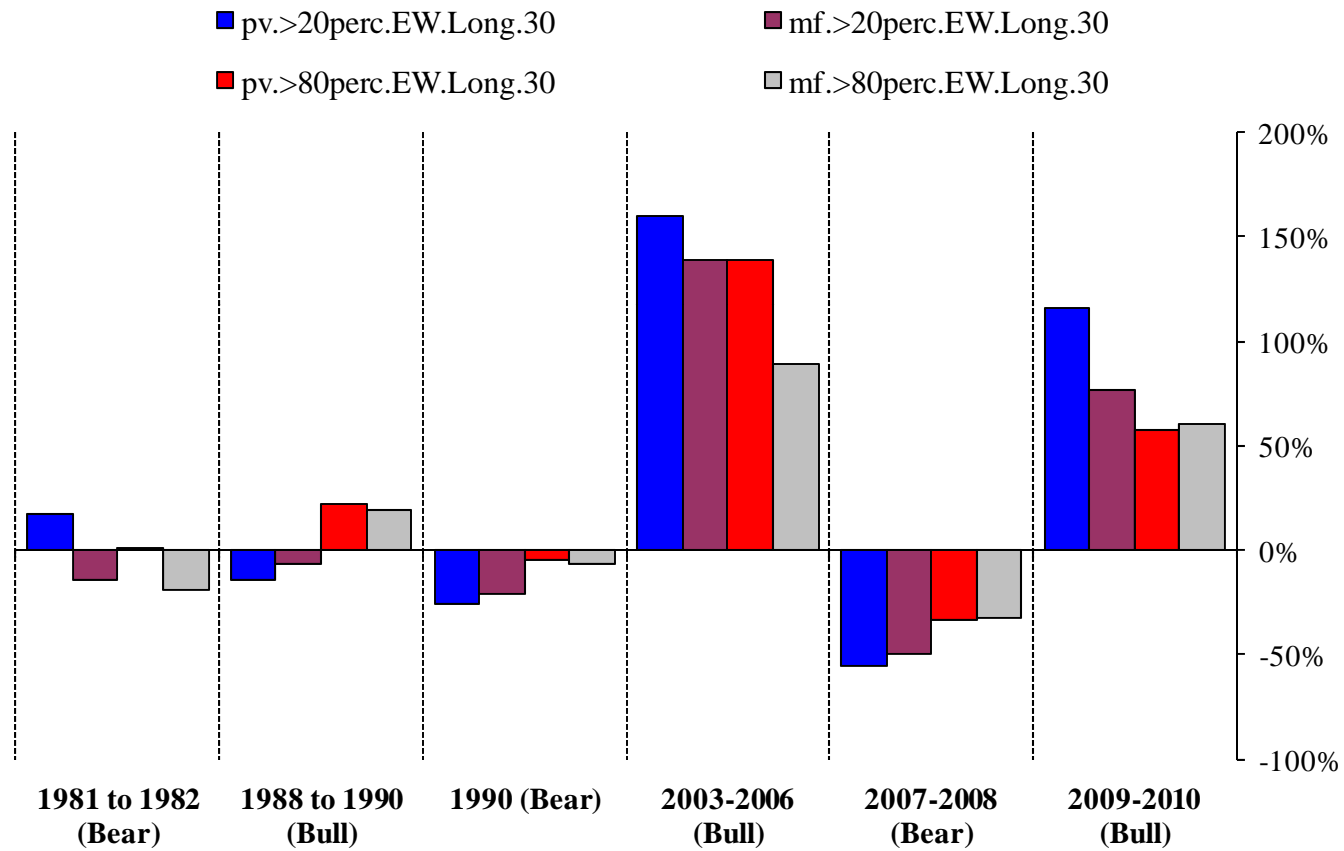


Translation:

Pv.>20perc.EW.Long.30 → Profit and Value, all stocks >20% market cap NYSE breakpoint, Equal-Weight, Long, 30 stocks

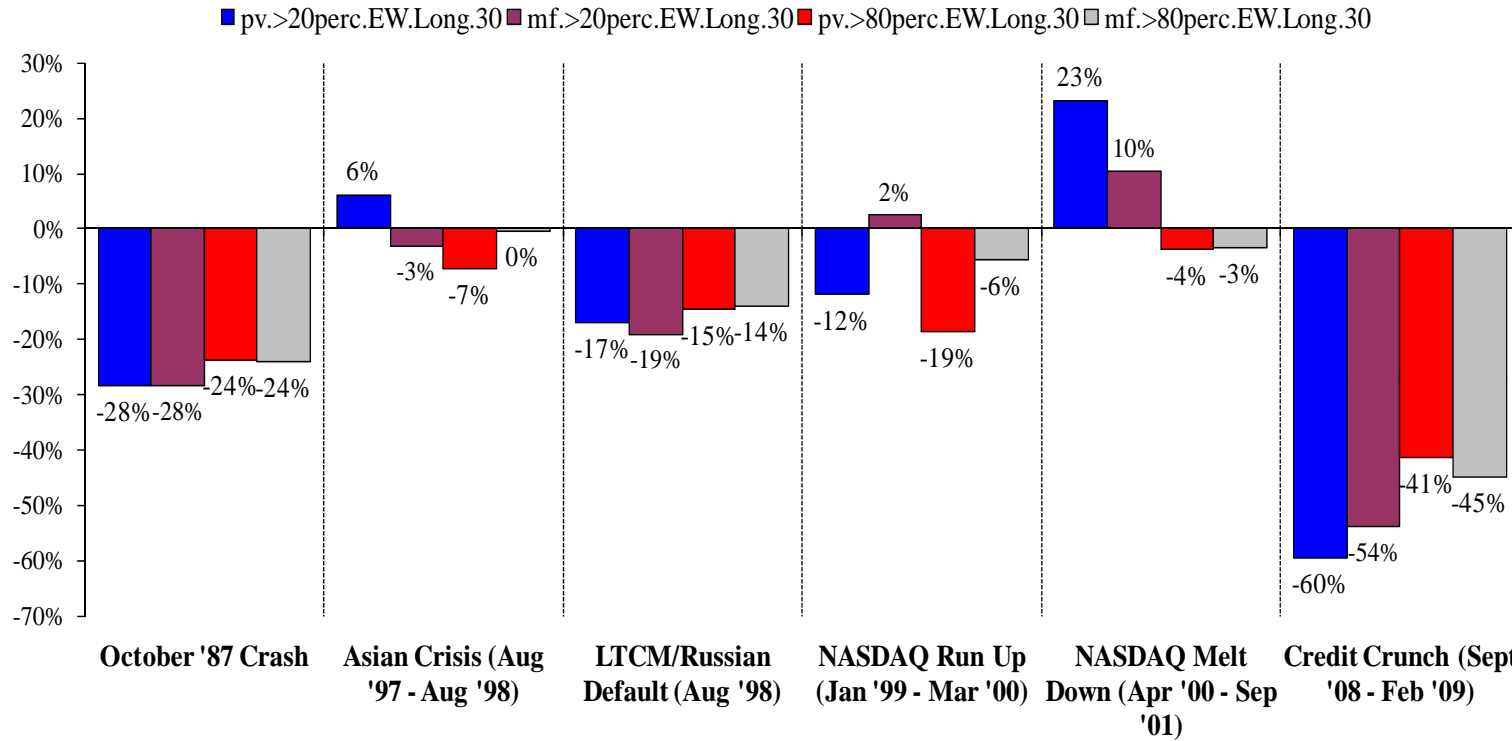
# Performance Analysis—Overview

## Market Cycle Performance



# Performance Analysis—Risk Assessment

## Short-Term Event Stress Tests



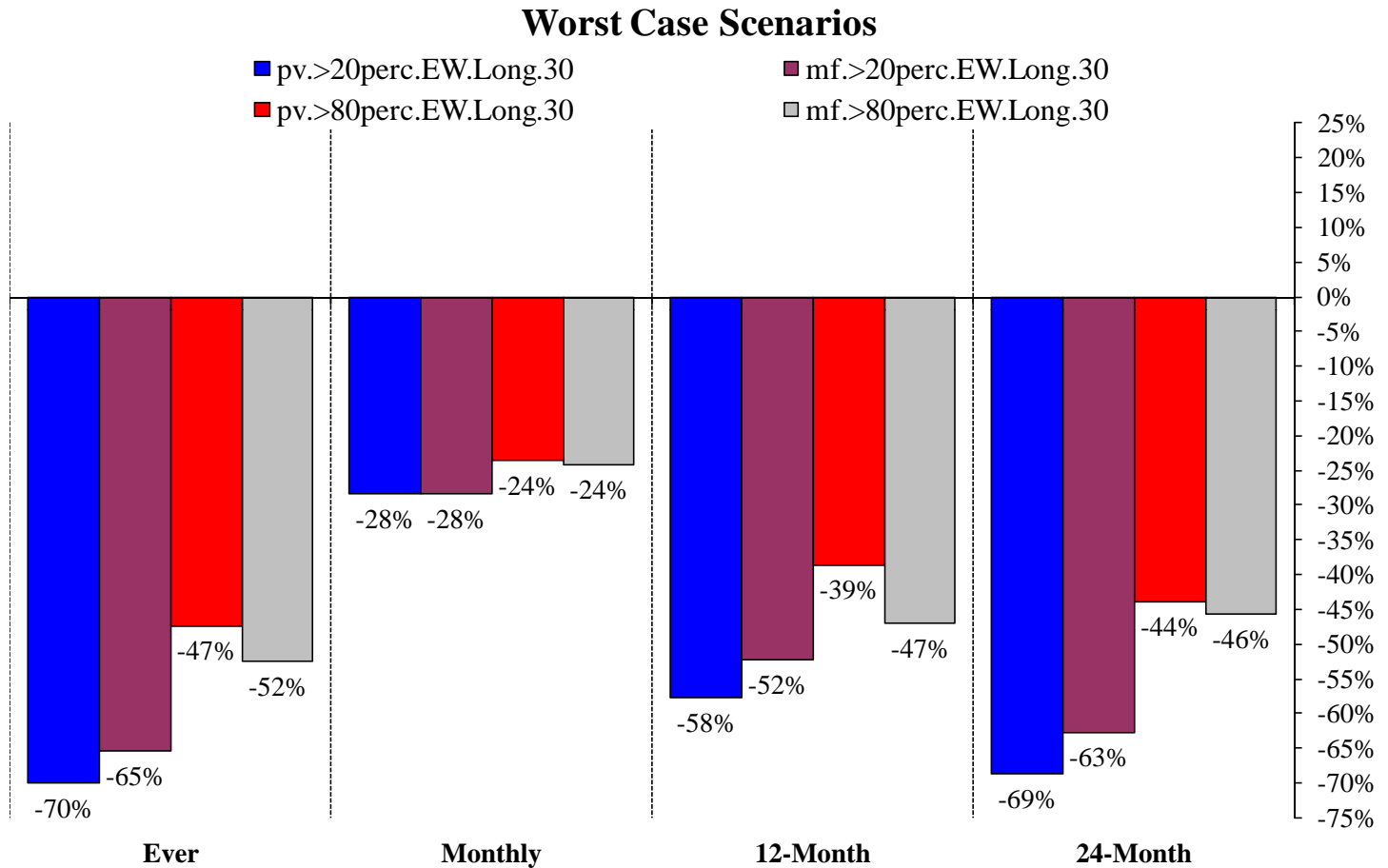
| Strategy              | October '87 Crash | Asian Crisis (Aug '97 - Aug '98) | LTCM/Russian Default (Aug '98) | NASDAQ Run Up (Jan '99 - Mar '00) | NASDAQ Melt Down (Apr '00 - Sep '01) | Credit Crunch (Sept '08 - Feb '09) |
|-----------------------|-------------------|----------------------------------|--------------------------------|-----------------------------------|--------------------------------------|------------------------------------|
| pv.>20perc.EW.Long.30 | -28.42%           | 6.18%                            | -16.91%                        | -11.92%                           | 23.19%                               | -59.55%                            |
| mf.>20perc.EW.Long.30 | -28.42%           | -3.06%                           | -19.02%                        | 2.48%                             | 10.35%                               | -53.96%                            |
| pv.>80perc.EW.Long.30 | -23.64%           | -7.23%                           | -14.62%                        | -18.56%                           | -3.71%                               | -41.47%                            |
| mf.>80perc.EW.Long.30 | -24.12%           | -0.36%                           | -13.99%                        | -5.50%                            | -3.38%                               | -44.91%                            |





# Performance Analysis—Risk Assessment

➤ Profit and Value had larger drawdowns

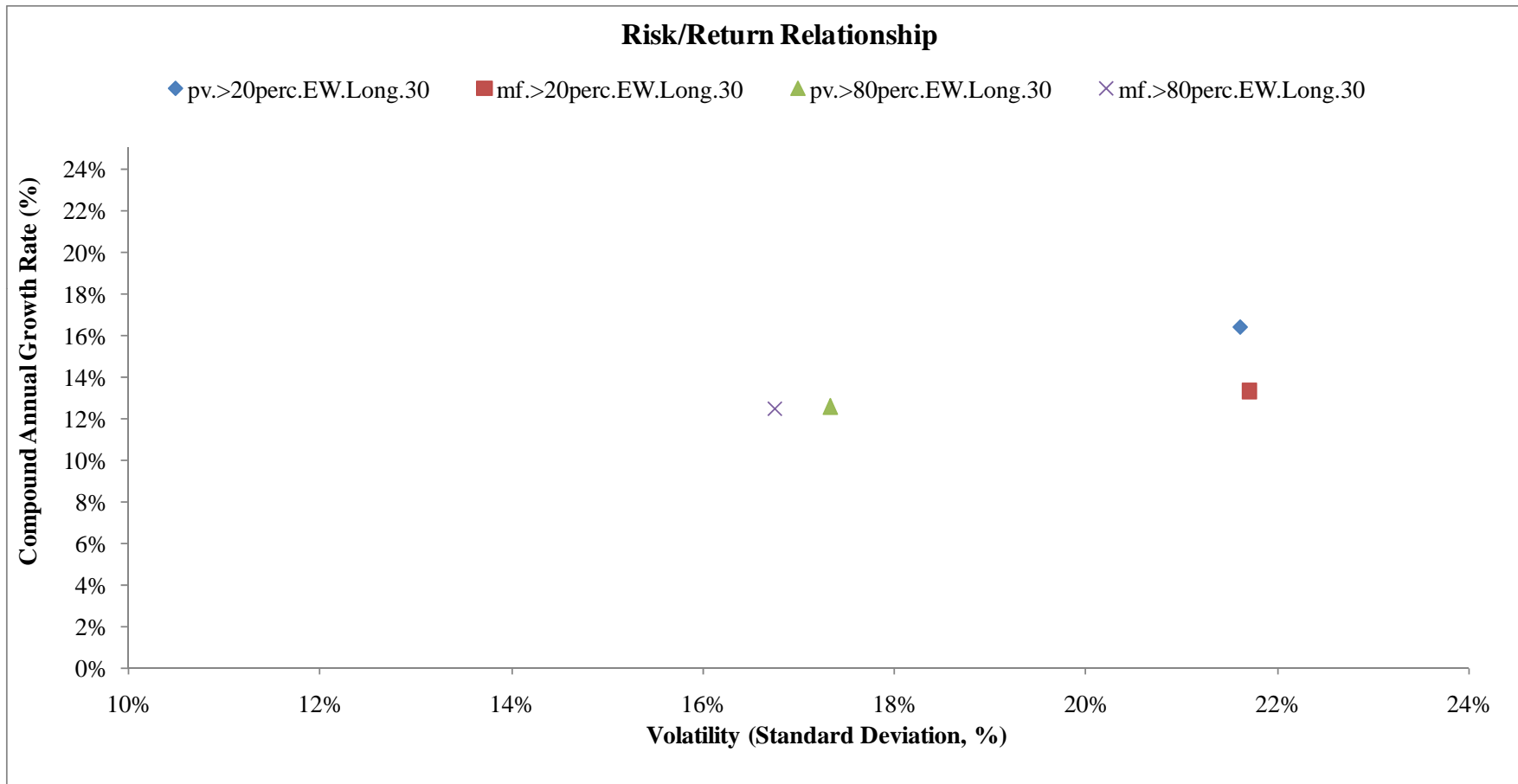


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# Performance Analysis—Risk Assessment

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➤ Profit and value wins for small stocks, magic formula wins for large-caps





## Long/Short

### Label Translation:

Pv.LS.>20perc → Profit and Value, all stocks >20% market cap NYSE breakpoint, Equal-Weight, Long/Short, 30 stocks each book

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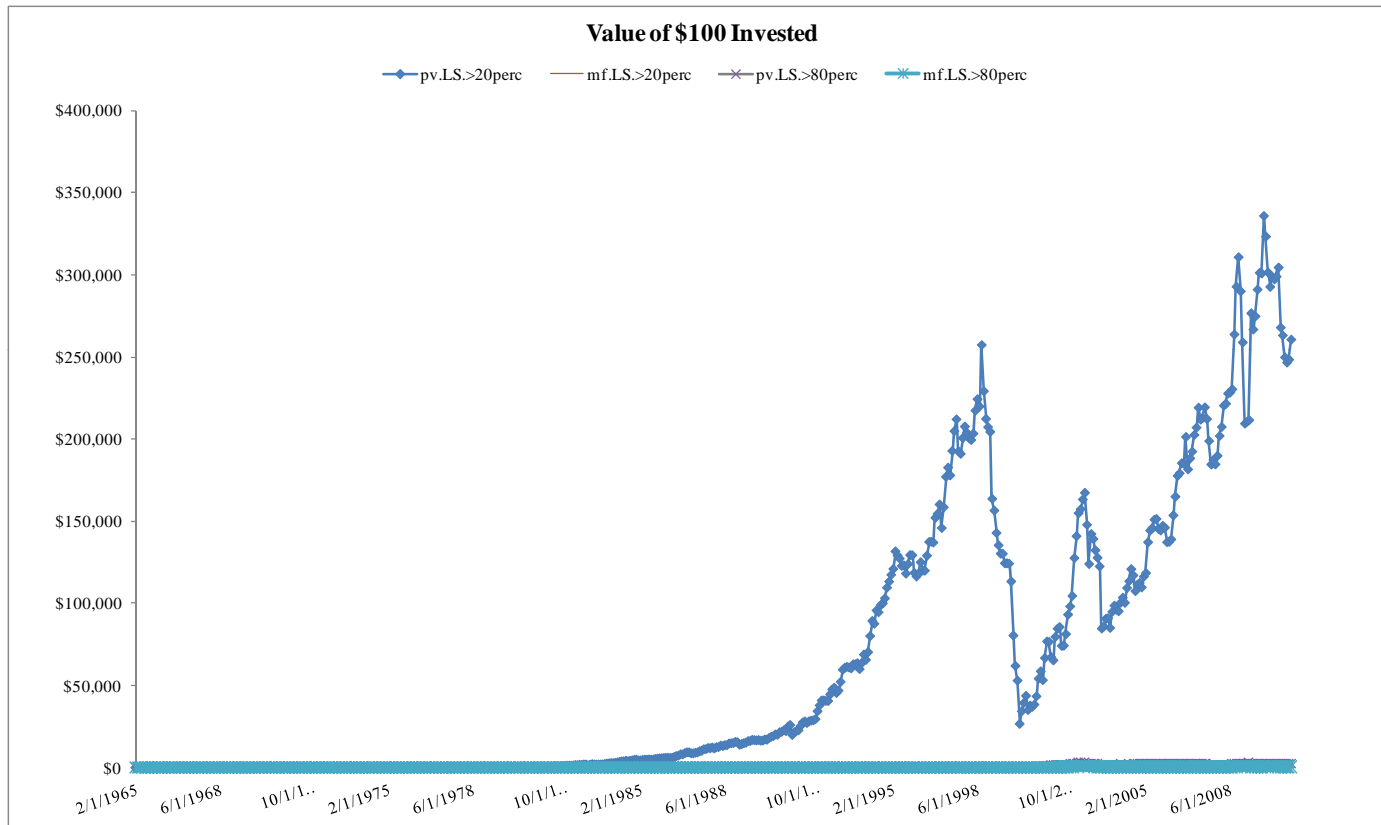
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# Performance Analysis—Overview

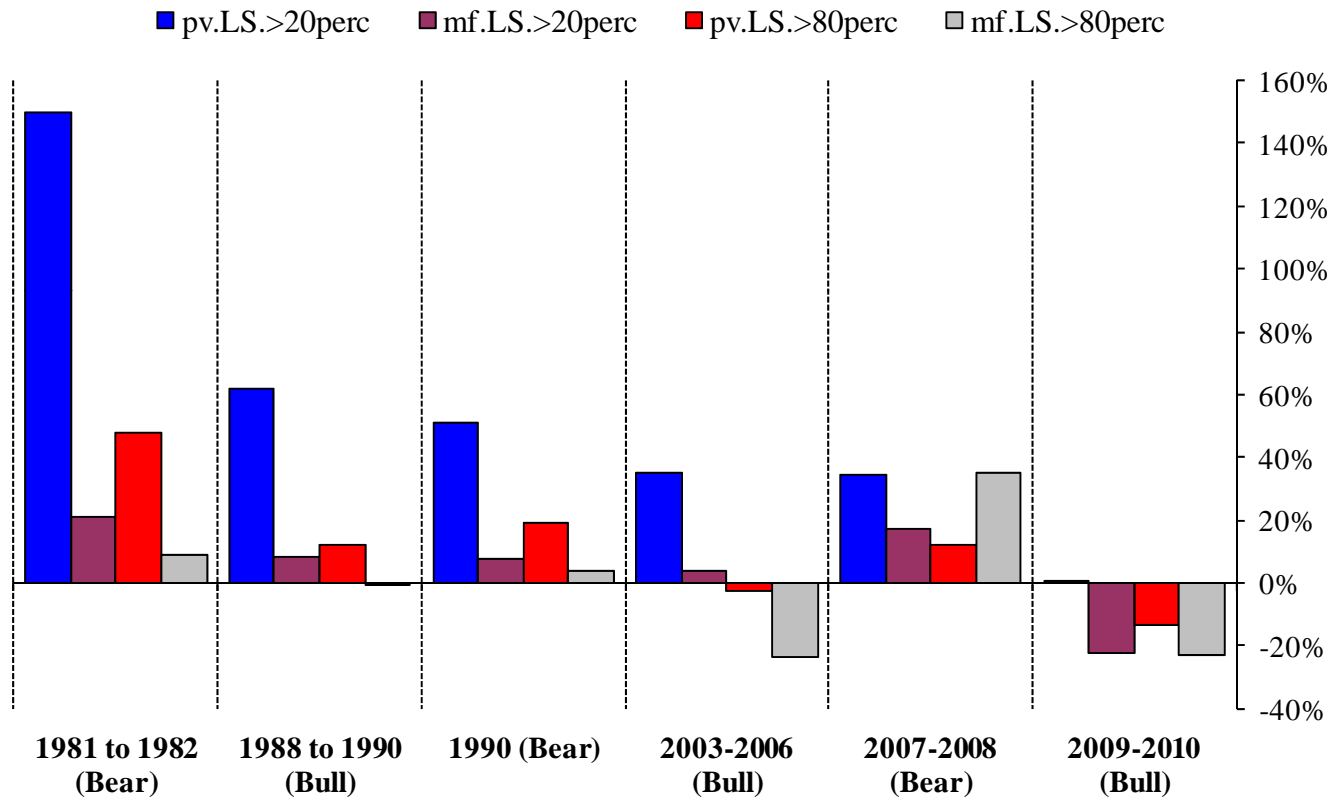
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➤ Profit and Value outperforms, but risk is INSANE.



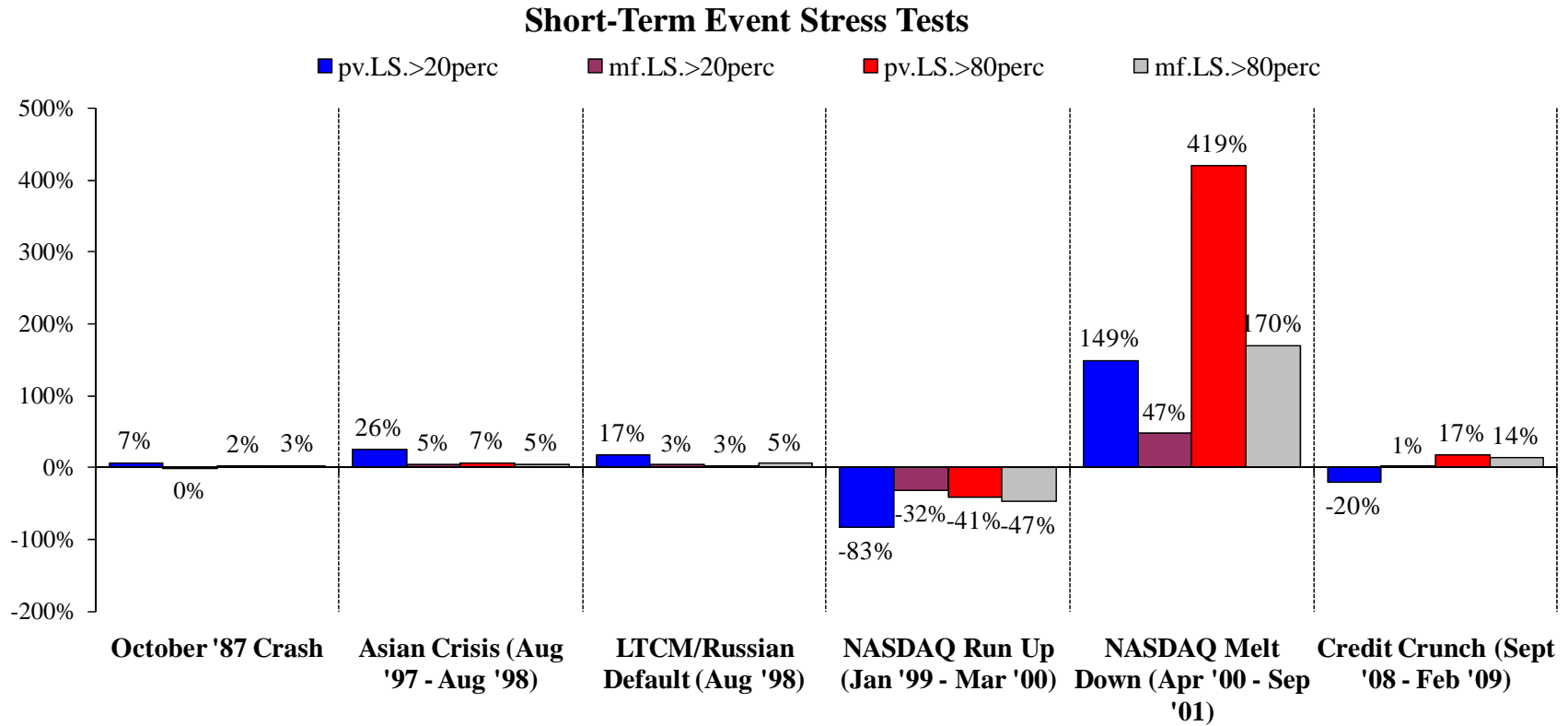
# Performance Analysis—Overview

## Market Cycle Performance



# Performance Analysis—Risk Assessment

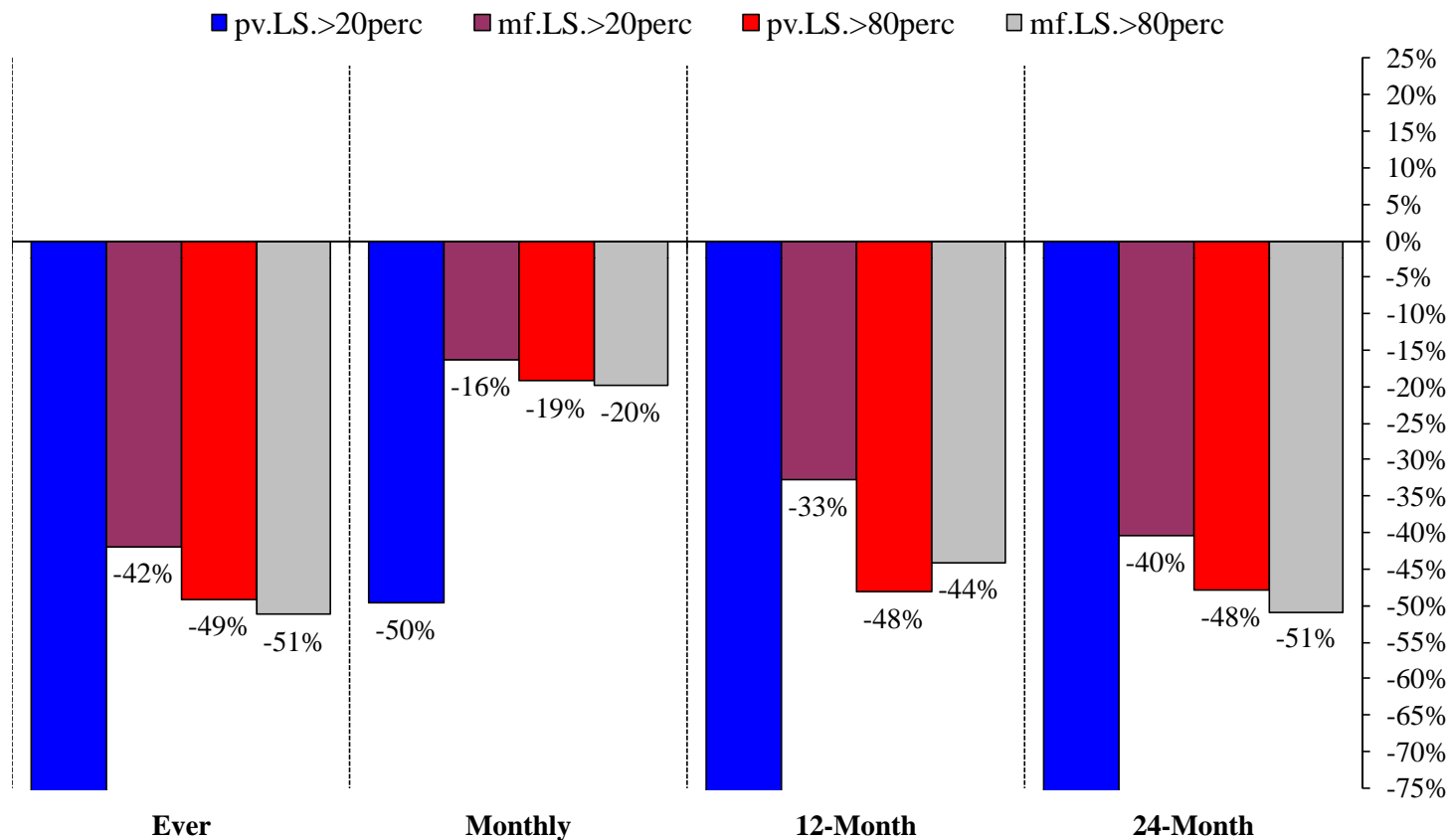
➤ Short book dominates the story



# Performance Analysis—Risk Assessment

➤ Profit and value L/S drawdowns are literally off the charts

## Worst Case Scenarios

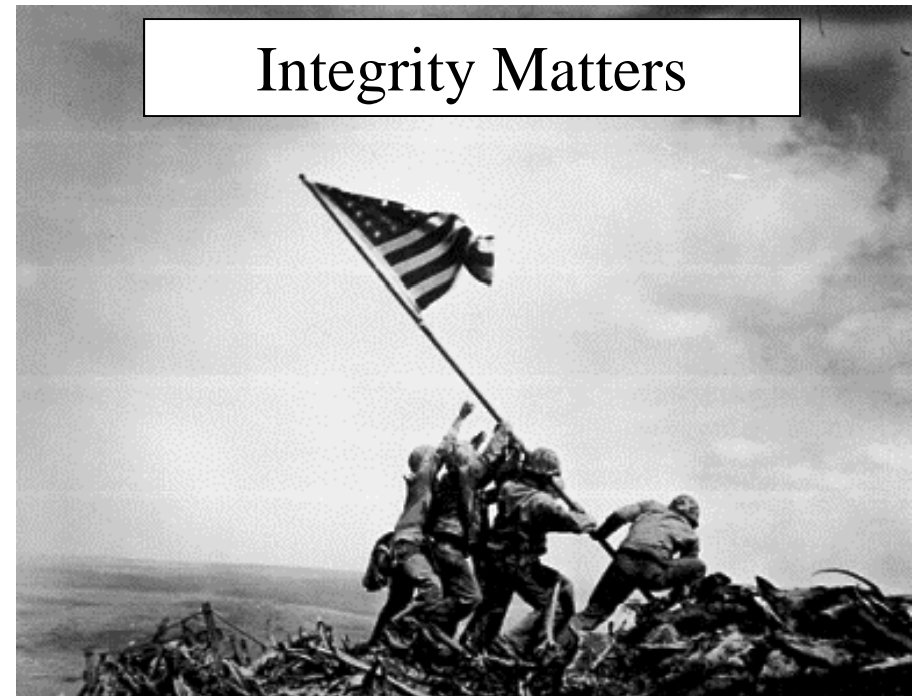


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## Conclusion

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- **Combining quality and price are decent for Long-Only Investors**
- **Internet bubble screws L/S results**
  - **L/S is a recipe for bankruptcy in a “bubble”**
- **Nothing in life is Free**
  - **High Risk → High Reward**
- **If it sounds too good to be true...  
...it probably is...**
- **More research needed...**





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# Performance Disclosures

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## Questions?

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