

Smart beta and portfolio insurance: A happy marriage?

David Ardia¹ & Kris Boudt² & Marjan Wauters³

¹Université de Neuchâtel

²Vrije Universiteit Brussel & VU Amsterdam

³KU Leuven

May, 21st 2016

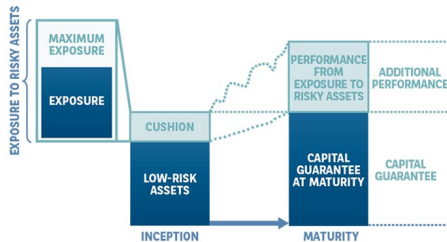
Smart beta equity portfolios

- Smart beta portfolios are designed to add value by selecting, weighting and rebalancing portfolios based on characteristics *other than market capitalization*
- Long-run: smart beta outperforms the market capitalization portfolio on risk-adjusted basis
- Short-run: exposed to sudden unexpected drawdowns
- Capital protection: portfolio insurance strategy
 - Constant Proportion Portfolio Insurance (Perold, 1986 and Black & Jones, 1987)

⇒ **Smart beta + portfolio insurance = smarter beta?**

Definition of CPPI

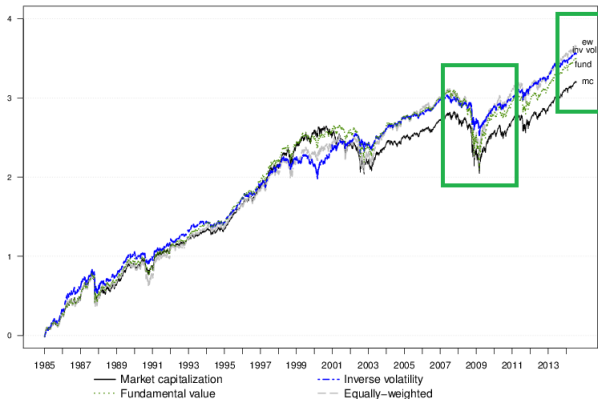
- Goal: capital protection at end of investment horizon and participate in upside potential equity portfolio
- Allocation across risk-free and risky asset (equity portfolio)
- Trading rule: increase position in equity when market goes up, shift to risk-free asset when market goes down



Impact of equity portfolio on the performance of portfolio insurance strategy

- How sensitive is the CPPI performance to the choice of the underlying equity index?
 - Extensive performance analysis on S&P 500 investment universe
 - Market-capitalization weighted portfolio
 - Low-volatility portfolio
 - Fundamental value portfolio
 - Equally-weighted portfolio
- ... and how does this interact with:
 - Design of CPPI portfolio
 - Equity market regime

Buy-and-hold performance



- Difference in performance of the equity portfolios

→ ? Difference in CPPI performance ?

Results

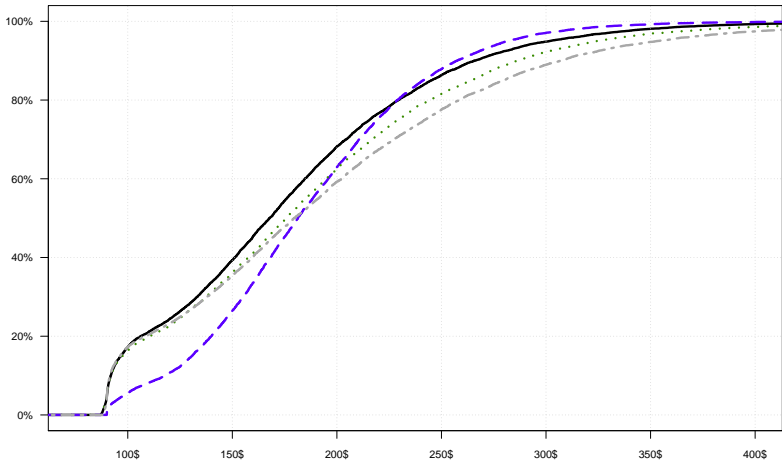
- What is the impact of the choice of the equity portfolio on CPPI performance?

	Mean	Vol	SR	#Gap	Exposure	Turnover
Market cap	14.97	30.97	0.29	476	89.40	69.75
Low-risk	16.97	24.57	0.45	46	95.86	33.94
Fund	16.91	34.63	0.32	453	89.57	66.31
EW	18.44	39.13	0.32	460	88.84	68.80

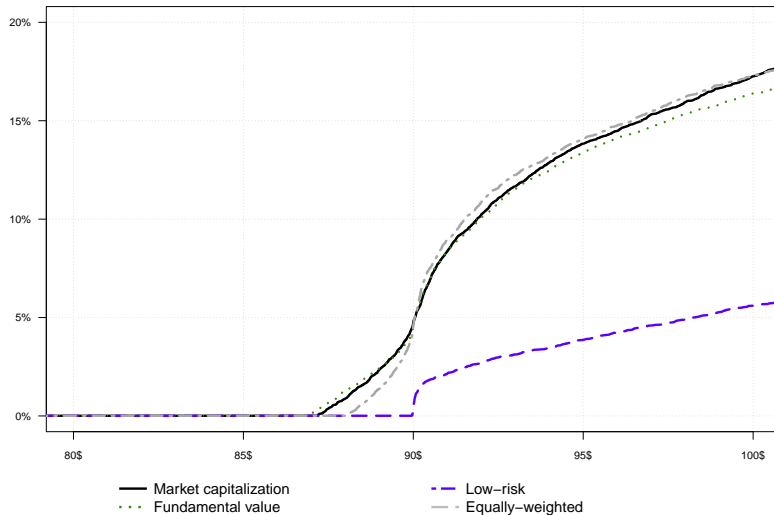
Gains of smart beta compared with market capitalization

- Low-risk: higher average return, lower risk (in spite of higher exposure to equity portfolio), lower gap risk, lower turnover: stability gains
- Results are mixed for other portfolios

CDF of CPPI end values



CDF of CPPI end values



CPPI performance under different market conditions

	Mean	Sd	SR	#Gap
<i>Bullish market</i>				
Market cap	30.28	24.87	0.98	17
Low-risk	27.08	20.88	1.01	0
<i>Bearish market</i>				
Market cap	1.63	8.64	-0.50	417
Low-risk	7.43	13.91	0.10	46

Differences are amplified in bearish markets i.e., when protection is most needed