

An Empirical Analysis of 130/30 Strategies*

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Overview

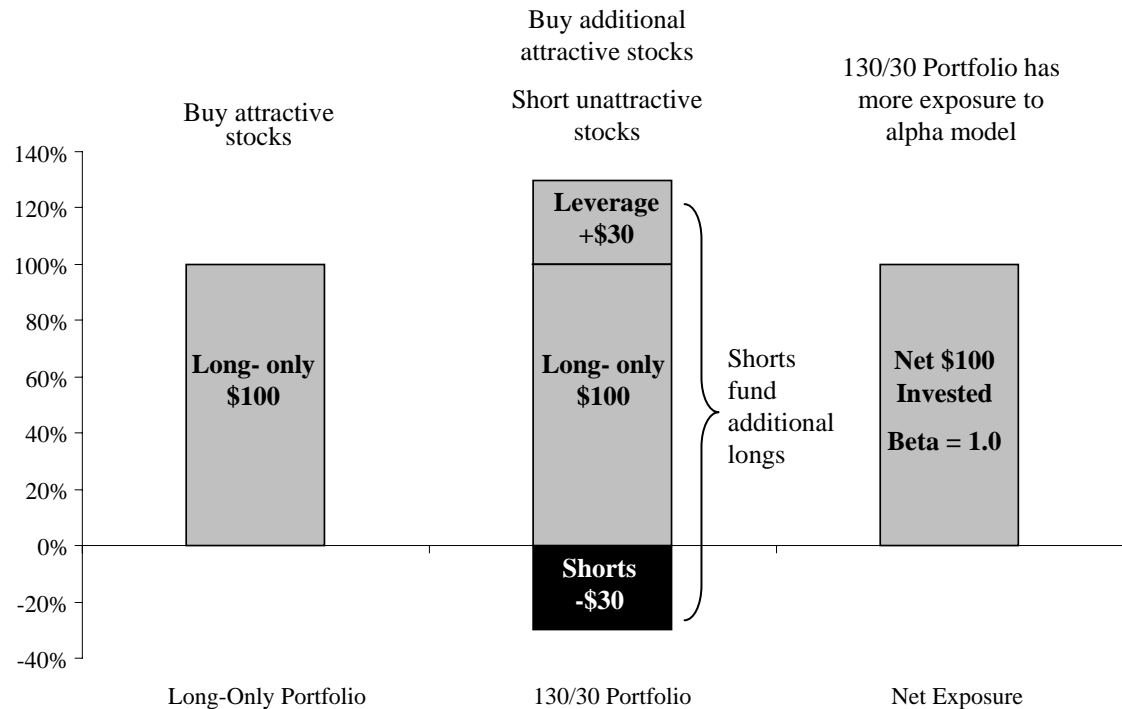
- Previous analytical evidence
- Mechanics of 130/30 portfolios
- Empirical performance of 130/30's
- Performance attribution
- Preliminary performance of actual 130/30 portfolios

Benefits from relaxing long-only constraints

- Grinold & Kahn [2000] demonstrate enhanced efficiency from ability to short stocks with negative expectations.
- Clarke et al. [2004] show the long-only constraint is most significant in terms of information loss and that 130/30 achieves 90% of the information transfer coefficient of a fully unconstrained portfolio.
- Sorensen et al. [2007] conclude that the enhanced performance from 130/30 type strategies outweighs the added costs and turnover under reasonable assumptions.

130/30 concept is simple:

- Short 30% unattractive stocks
- Invest 30% in additional longs



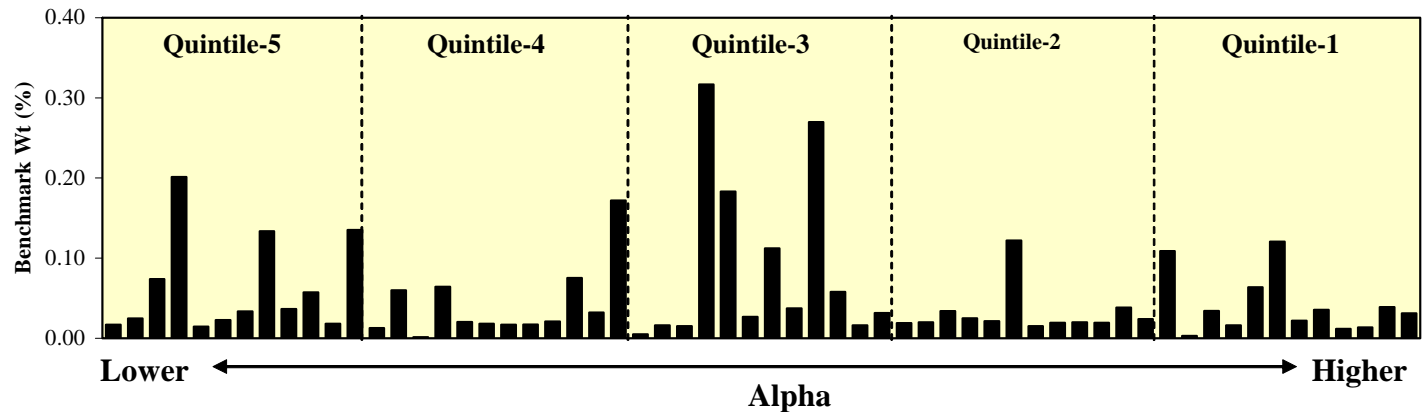
Fewer than 10% of stocks can be underweight 25bps or more relative to large cap benchmark

	All		Wt > 0.25%		Wt > 0.50%	
	R1000	EAFE	R1000	EAFE	R1000	EAFE
Energy	67	41	4	6	3	5
Materials	60	116	2	7	0	2
Industrials	122	245	8	2	1	1
Cons. Disc.	170	213	8	7	4	1
Consumer Staples	53	90	7	8	5	1
Health Care	102	55	12	6	6	5
Financials	204	240	18	32	9	16
Info. Technology	132	98	14	5	6	1
Telecom. Services	19	32	4	6	3	2
Utilities	58	44	2	8	0	1
Total	987	1174	79	87	37	35

Source: Frank Russell and MSCI

Stocks with highest weights do not necessarily have the lowest alphas

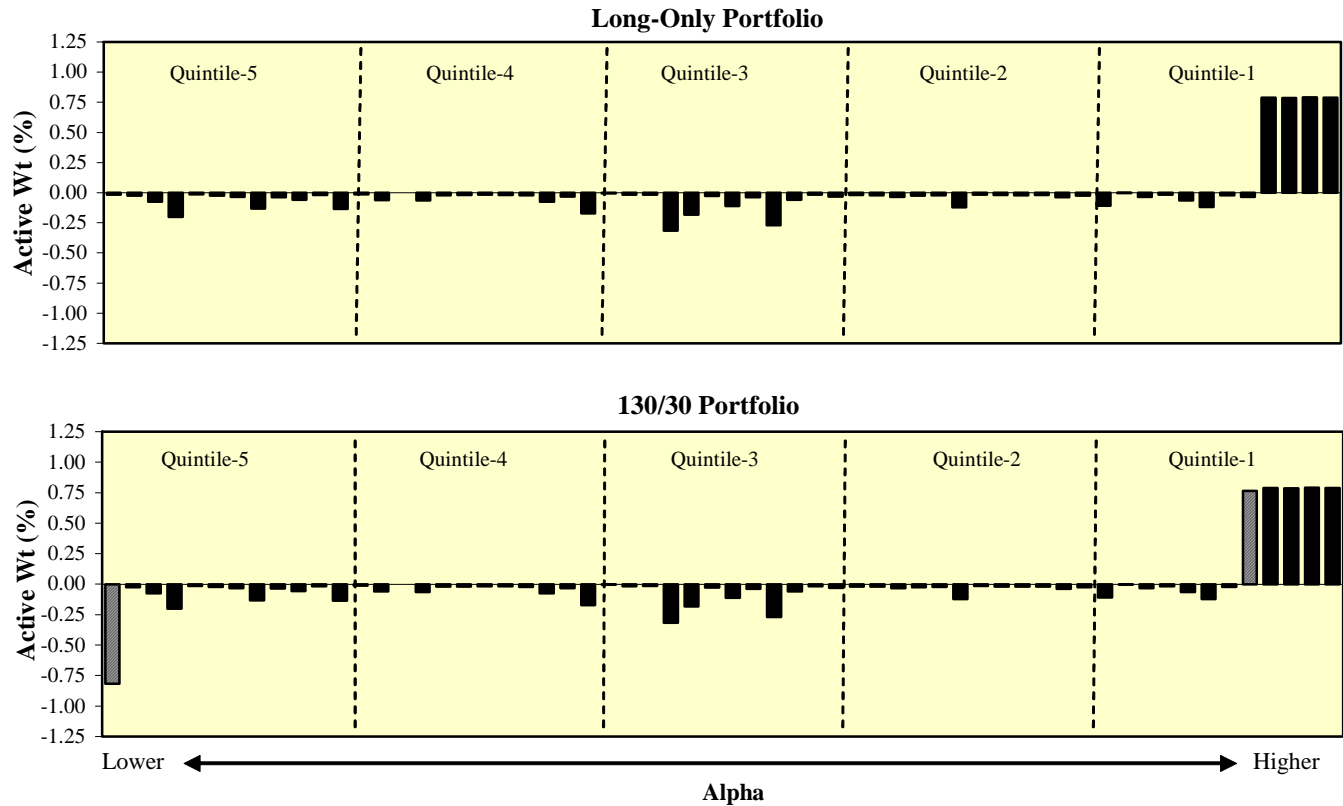
Example: Russell 1000 Materials



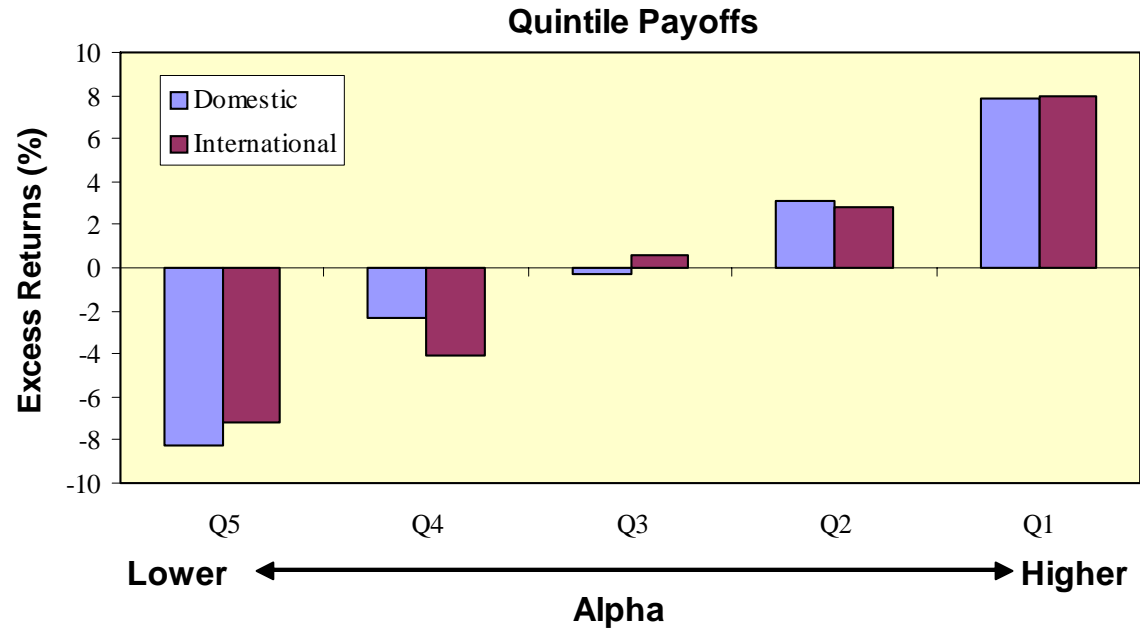
Russell 1000 Materials sector as of December 2006, ranked on illustrative alpha model. Source: Frank Russell Inc and LMCG.

+30/-30 Doubles Exposure to Q5 Stocks

Example: Russell 1000 Materials



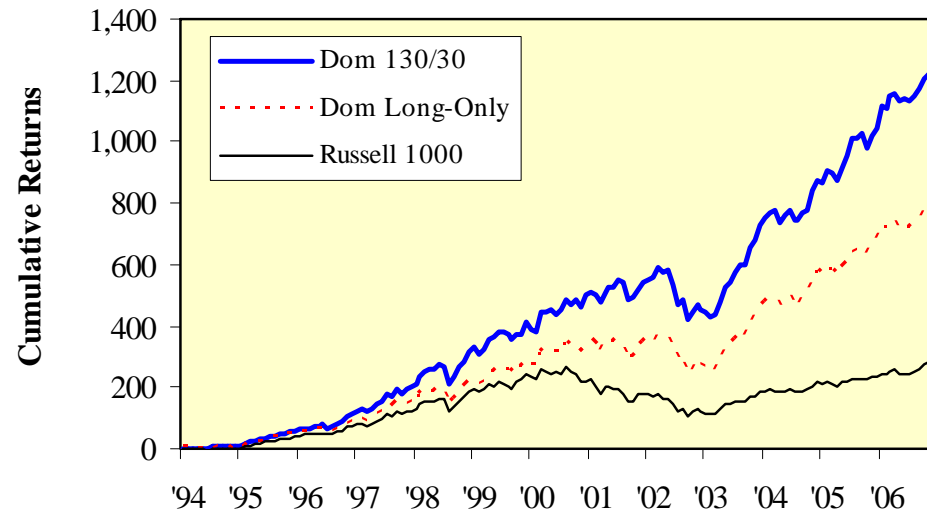
An Illustrative Alpha Model



- Equally weighted EstRevision, LtMomentum, E/P, B/P, S/P, ShareDecrease.
- Sector Neutral
- Largest 1000 Stocks
- Jan 1994 – Dec 2006

Returns represent illustrative model-driven results

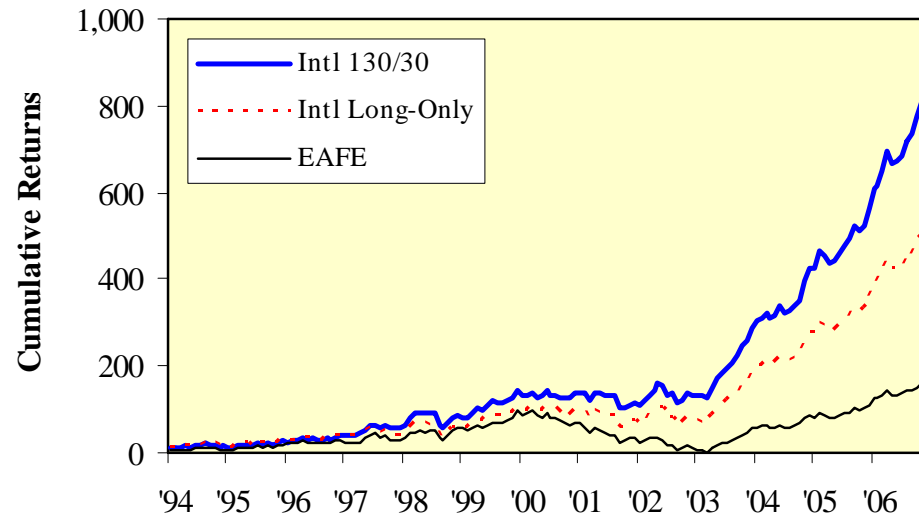
Domestic Portfolio Simulations



- Sector, industry, industry active weights $\pm 5\%$
- Predicted beta close to 1.0
- Average number of holdings: 110 for long-only, and 143 long and 42 short for 130/30
- Rebalanced back to 130/30 target weights monthly

Returns represent illustrative model-driven results

International Portfolio Simulations



Returns represent illustrative model-driven results

Performance Characteristics

	Excess Return	Info. Ratio	Tracking Error	Batting Average	Turn- Over
Domestic					
Long-Only	7.61	1.25	5.43	61	52
130/30	11.27	1.51	6.48	65	106
Ratios	1.48 x	1.21 x	1.19 x	1.06 x	2.04 x
International					
Long-Only	7.28	1.25	5.32	67	56
130/30	11.06	1.64	5.99	68	108
Ratios	1.52 x	1.31 x	1.12 x	1.01 x	1.93 x

- 130/30 outperform long-only by about 1.5 times.
- 130/30 tracking error is about 1.15 times higher.

Returns represent illustrative model-driven results

Attributing Performance to Longs & Shorts

- Scale excess returns of longs by net long percentage, e.g., 1.30
- Scale negative of excess returns of shorts by net short percentage, e.g., 0.30

Returns represent illustrative model-driven results

Domestic Contribution Example

Cumulative Returns 1994-2006	
Benchmark	11.0
130/30 Strategy	22.3
Longs	18.0
Shorts	4.1

$$\begin{aligned}
 C_L &= (R_L - R_B) \times W_L \\
 &= (18.0\% - 11.0\%) \times 1.3 \\
 &= 9.1\%
 \end{aligned}$$

$$\begin{aligned}
 C_S &= (R_B - R_S) \times W_S \\
 &= (11.0\% - 4.1\%) \times 0.3 \\
 &= 2.1\%
 \end{aligned}$$

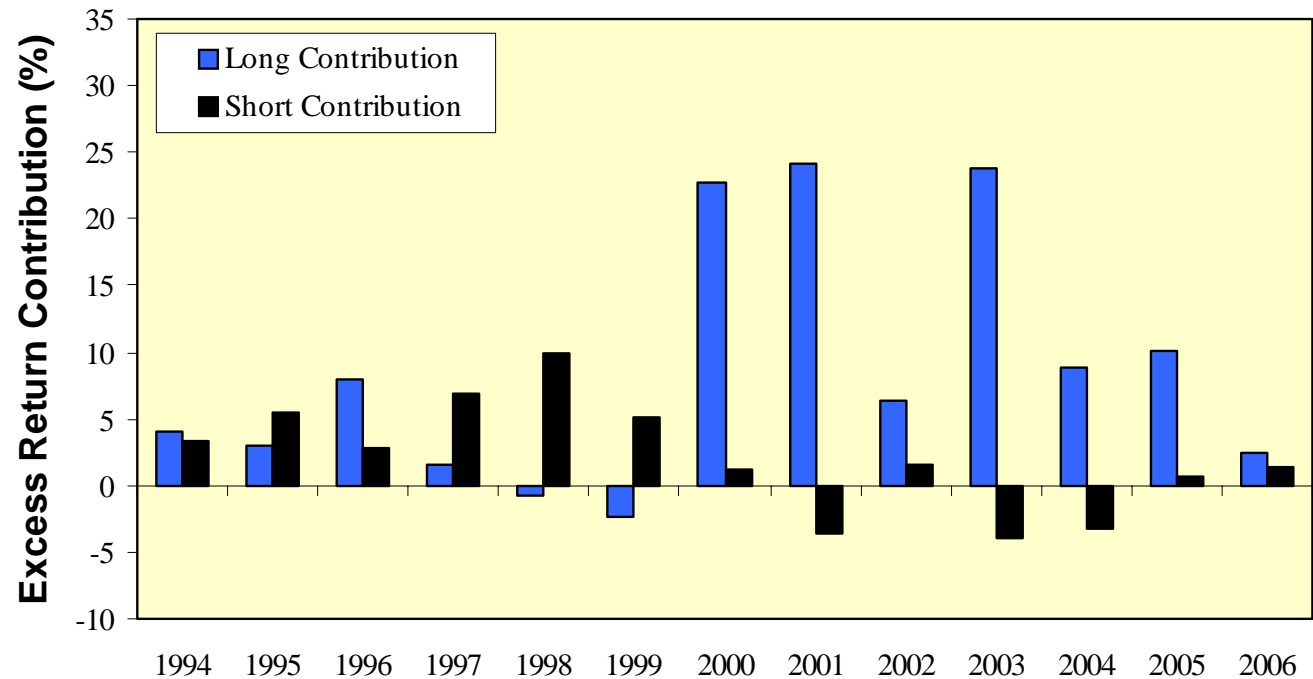
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Active Returns & Contributions

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Avg
Domestic														
Long-Only Active Return	3.0	3.5	4.7	3.0	-1.0	3.1	18.6	14.8	5.6	19.2	10.3	8.9	1.6	7.6
130/30 Active Return	7.7	8.8	10.8	9.3	11.0	2.9	24.7	20.0	7.9	19.6	5.7	11.2	3.7	11.3
Long Contribution	4.1	3.0	7.9	1.5	-0.7	-2.4	22.7	24.2	6.4	23.7	8.8	10.1	2.5	9.1
Short Contribution	3.3	5.4	2.8	7.0	9.9	5.2	1.3	-3.6	1.6	-4.0	-3.3	0.7	1.3	2.1
Long-Short Interaction	0.3	0.4	0.1	0.7	1.7	0.1	0.7	-0.6	-0.1	0.0	0.2	0.5	-0.1	0.1
International														
Long-Only Active Return	9.2	-2.1	3.1	-1.8	-5.5	0.4	12.4	9.3	16.0	25.1	11.4	7.6	9.8	7.3
130/30 Active Return	7.2	-1.5	3.9	10.6	-1.5	4.9	11.7	11.3	24.4	29.2	14.9	12.8	16.8	11.1
Long Contribution	6.6	-4.0	8.0	1.4	-6.4	-1.1	12.3	11.0	20.9	32.6	16.7	13.0	11.6	9.3
Short Contribution	0.6	2.9	-4.0	7.9	5.0	5.7	-0.6	0.2	2.4	-3.5	-1.8	-0.2	4.3	1.6
Long-Short Interaction	0.0	-0.4	-0.1	1.3	-0.1	0.3	0.0	0.1	1.1	0.0	0.0	0.0	0.9	0.1

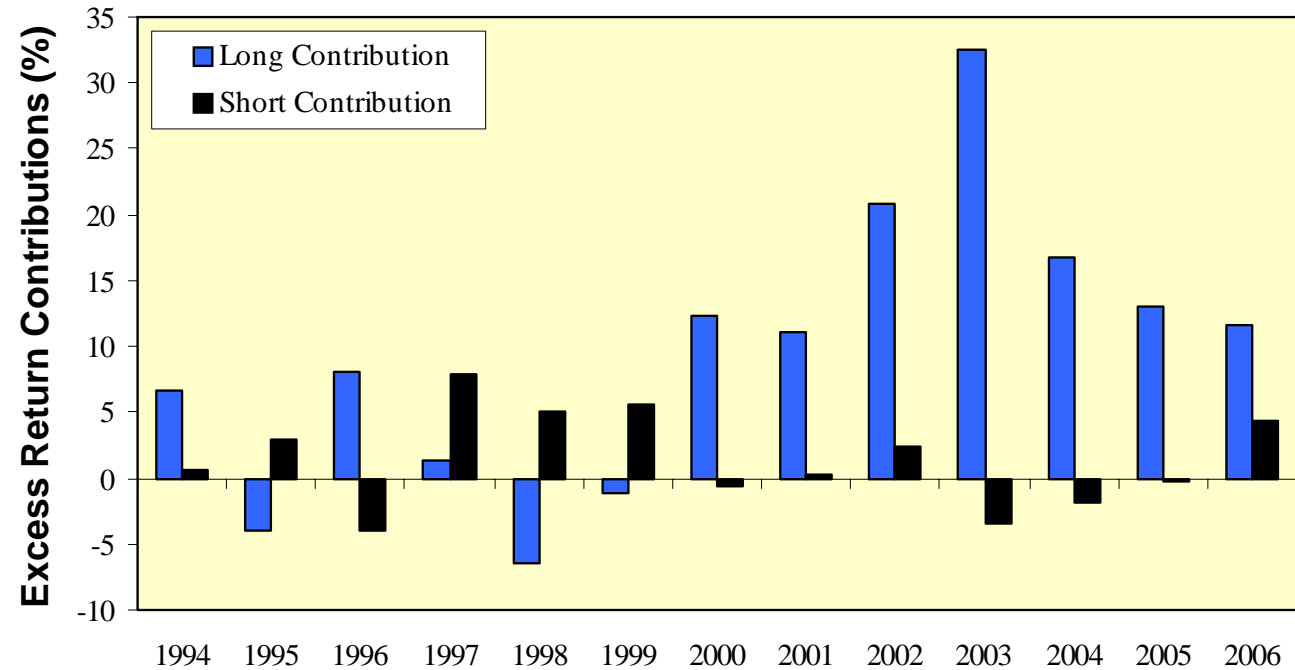
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Domestic 130/30 Long/Short Contributions



Returns represent illustrative model-driven results

International 130/30 Long/Short Contributions



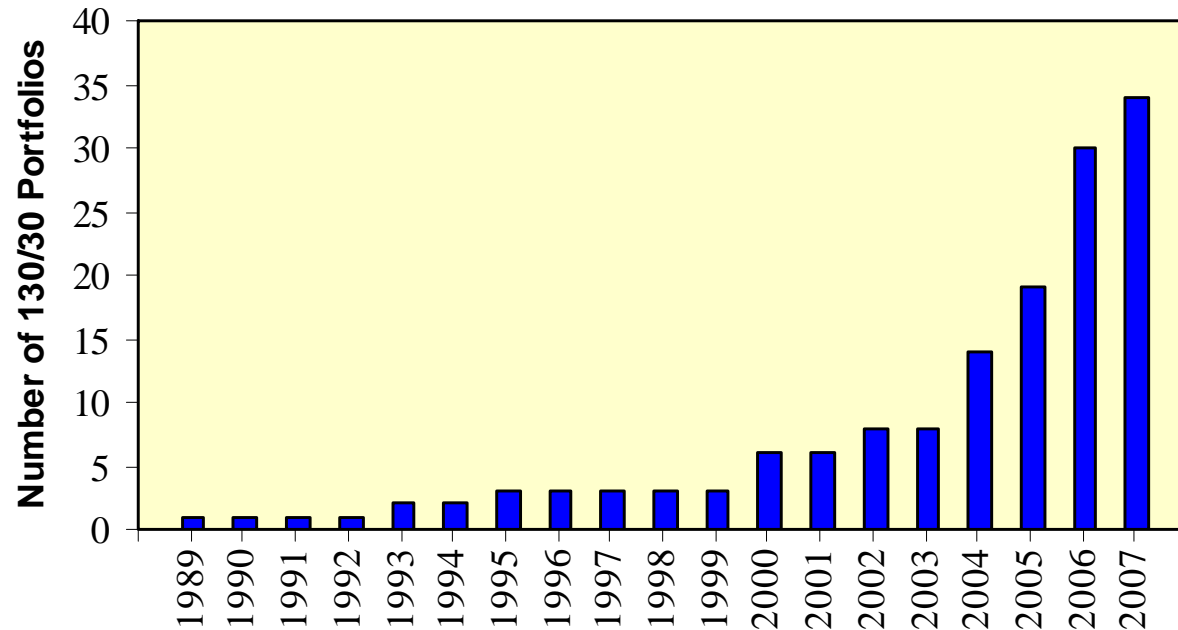
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Performance 2007 YTD-Aug

	Excess Returns	
	Dom	Intl
Long-Only YTD	-5.62	2.75
130/30 YTD	-3.98	9.47
Long Only Aug	-3.21	-1.55
130/30 Aug	-2.90	-1.36

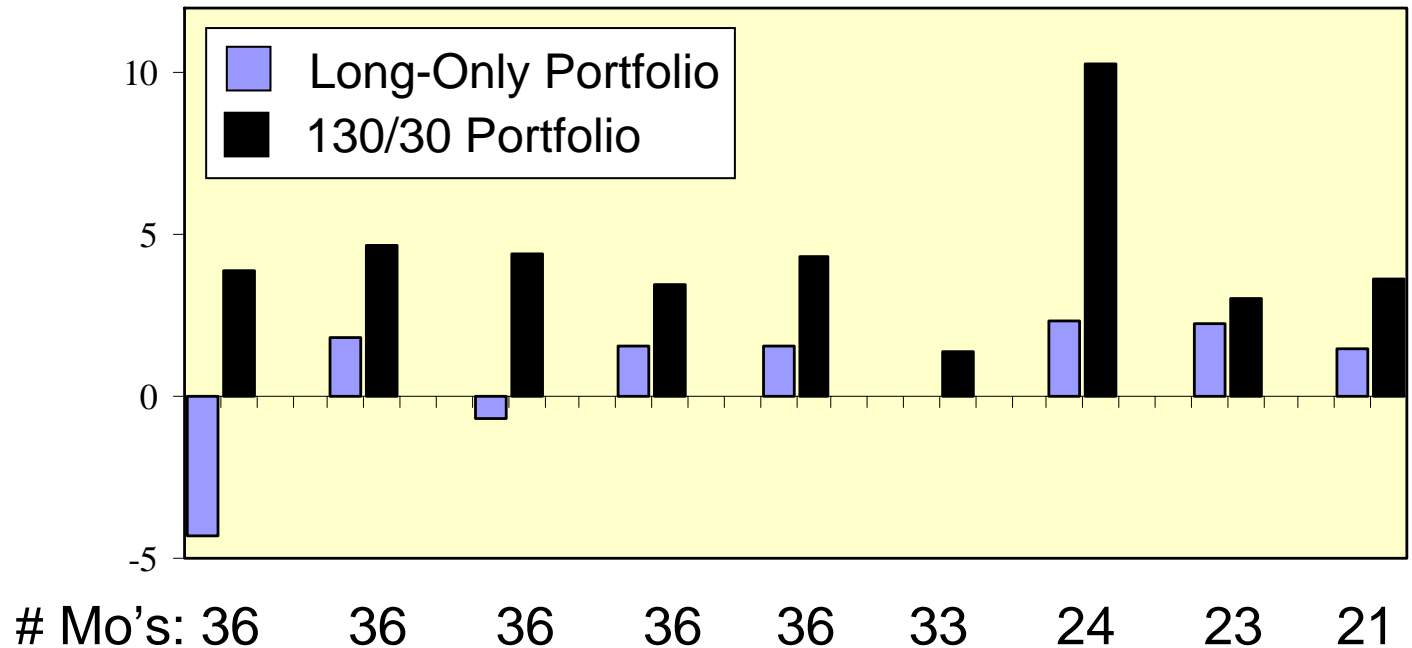
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How Many 130/30 Portfolios Have Live Track Records?



Source: Evestment Alliance. All domestic 130/30 and similar short enabled institutional portfolios listed as of June 2007.

Performance of Live 130/30's



Source: Evestment Alliance and Frank Russell. Domestic large-cap core 130/30 and similar short-enabled portfolios. Shown are excess returns versus Russell 1000 over the 36 month period 200407-200706, or the life of the 130/30 portfolio. Long-only portfolio is a large-cap core long only portfolio from the same firm.

References

Grinold, Richard C. "The Fundamental Law of Active Management." *The Journal of Portfolio Management*, vol. 15, no. 3 (Spring 1989), pp. 30-37.

Clarke, Roger, Harinda de Silva, and Steven Thorley. "Portfolio Constraints and the Fundamental Law of Active Management." *Financial Analysts Journal*, vol. 58, no. 5 (September/October 2002), pp. 48-66.

Sorensen, Ronald Hua, and Edward Qian. "Aspects of Constrained Long-Short Equity Portfolios." *Journal of Portfolio Management*, Winter 2007, pp. 12-20.