How to Look Clever and Have Envious Neighbors: Average Volatility Managed Leverage Timing

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- $W_t = \frac{1}{AV_{t-1}}$ is the investment weight on the CRSP market portfolio

Variance Prediction

AV	0.545^{***}			0.489^{***}	0.257^{***}
	$p = 0.000$			$p = 0.000$	$p = 0.001$
AC		0.332^{***}		0.160^{***}	
		$p = 0.000$		$p = 0.00001$	
SV			0.551^{***}		0.320^{***}
			$p = 0.000$		$p = 0.00002$
Constant	-0.0005	-0.0001	-0.0003	-0.0005	-0.0004
	$p = 0.989$	$p = 0.999$	$p = 0.993$	$p = 0.989$	$p = 0.991$
R^2	0.297	0.110	0.304	0.320	0.317
Adjusted R^2	0.296	0.109	0.303	0.318	0.315

Return Prediction

AV	-0.130^{***}			-0.168^{***}	-0.173^{*}
	$p = 0.001$			$p = 0.0001$	$p = 0.052$
AC		0.049		0.108^{***}	
		$p = 0.212$		$p = 0.010$	
SV			-0.107^{***}		0.048
			$p = 0.006$		$p = 0.588$
Constant	-0.000	-0.000	-0.000	-0.000	-0.000
	$p = 1.000$	$p = 1.000$	$p = 1.000$	$p = 1.000$	$p = 1.000$
N	655	655	655	655	655
R^2	0.017	0.002	0.012	0.027	0.017
Adjusted R^2	0.015	0.001	0.010	0.024	0.014

Notes: ***,**, and * Significant at the 1, 5, and 10 percent levels.

Out of Sample Results

Table: Sample 1970:07 to 2016:12

	DM	MSE-F	ENC-HLN
AC_{t+1}	1.074	109.736***	1
SV_{t+1}	1.53*	29.252***	1**
AV_{t+1}	2.286**	109.333***	1***
RET_{t+1}	1.278	11.801***	1*

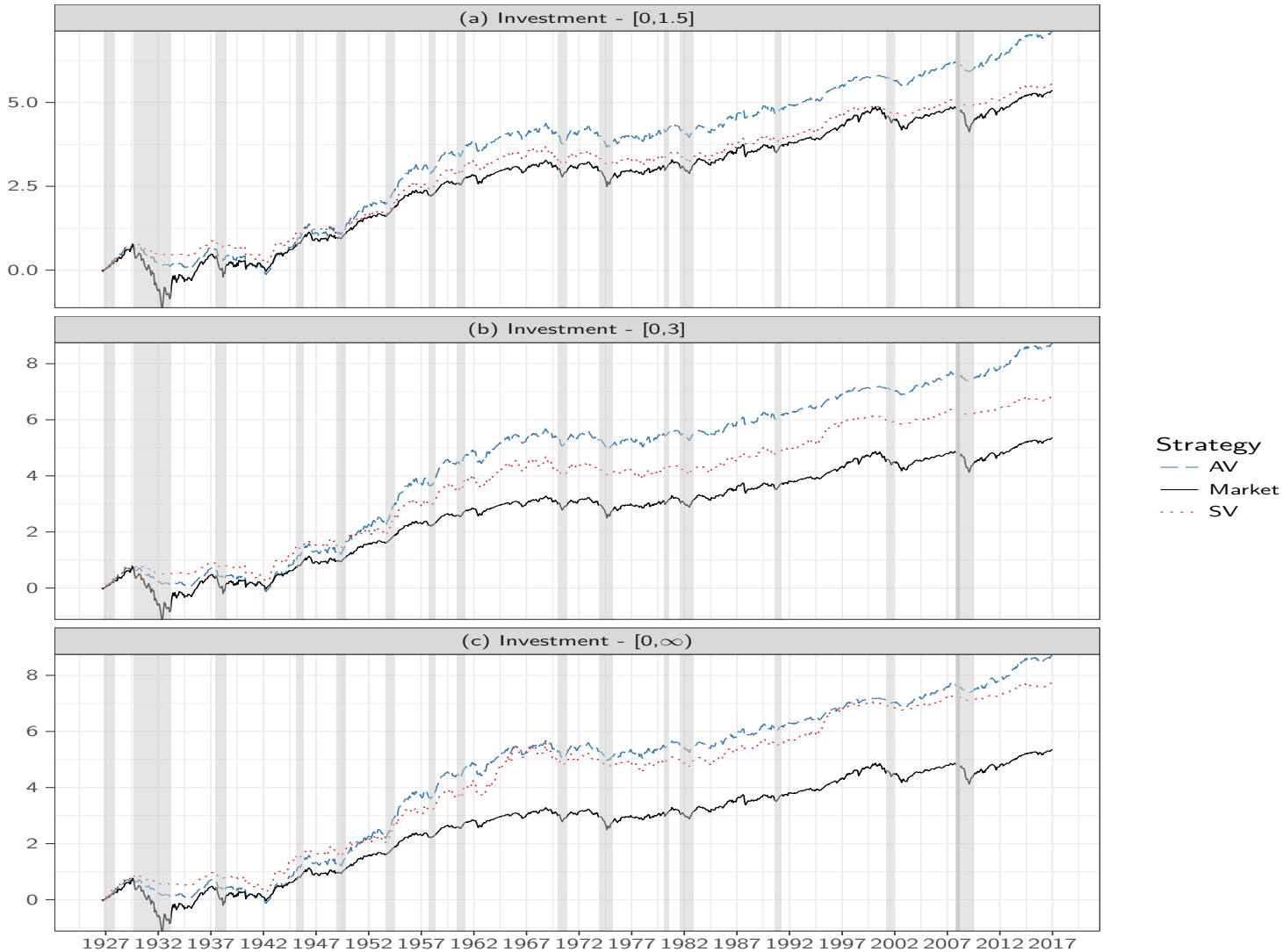
Out of Sample Results

Table: Sample 1939:12 to 2016:12

	DM	MSE-F	ENC-HLN
AC_{t+1}	1.604*	46.251***	1**
SV_{t+1}	1.041	21.57***	0.956**
AV_{t+1}	3.104***	198.267***	1***
RET_{t+1}	-2.027	-8.702	0

Notes: ***,**, and * Significant at the 1, 5, and 10 percent levels.

Returns


(a) Investment - [0,1.5]
(b) Investment - [0,3]
(c) Investment - [0,∞)
5.0
2.5
0.0
8
6
4
2
0
1927 1932 1937 1942 1947 1952 1957 1962 1967 1972 1977 1982 1987 1992 1997 2002 2007 2012 2017
Strategy
AV
Market
SV

Investment Weight

$w_{AV,t} = \frac{c_{AV}}{AV_{t-1}}$ and $w_{SV,t} = \frac{c_{SV}}{SV_{t-1}}$

c is a constant used to equalize the standard deviation of strategies to the buy and hold

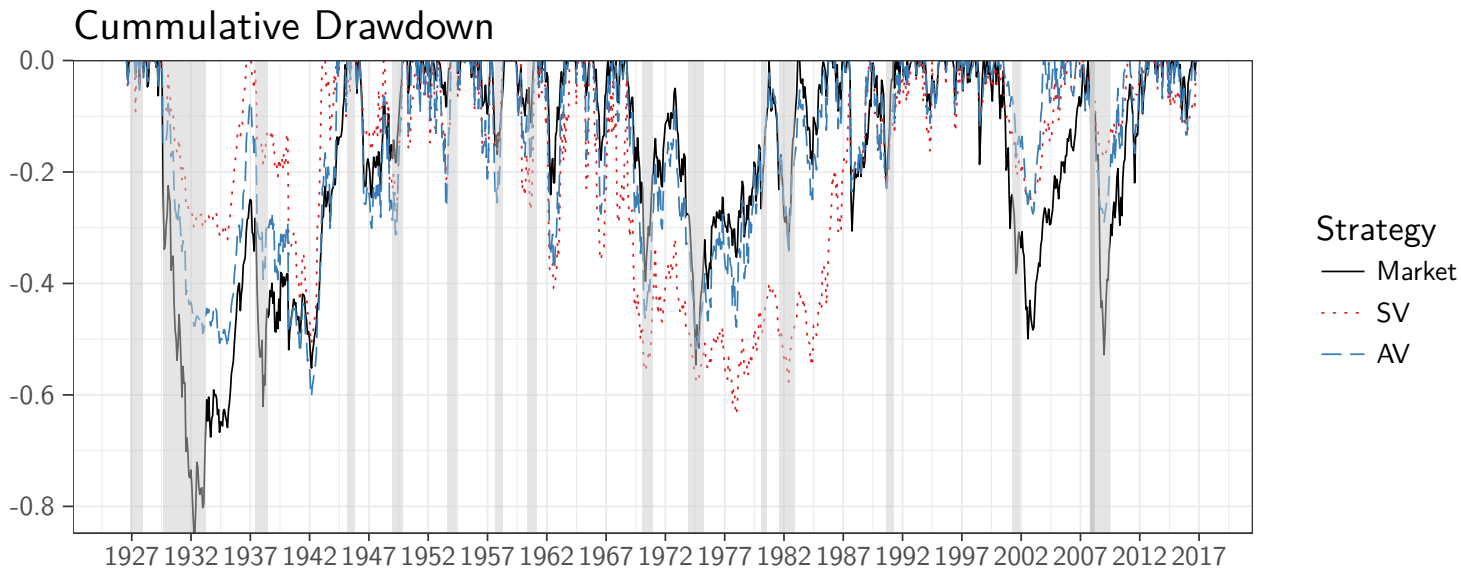
Investment Weight

Portfolio	Target	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
SV	c_{029}	0.697	0.762	0.009	0.246	0.512	0.874	8.743
AV	c_{029}	0.702	0.383	0.018	0.425	0.667	0.915	2.296
SV	c_{035}	0.841	0.920	0.011	0.297	0.618	1.055	10.552
AV	c_{035}	0.848	0.463	0.022	0.513	0.805	1.104	2.772
SV	c_{053}	1.290	1.412	0.017	0.455	0.948	1.619	16.193
AV	c_{053}	1.301	0.710	0.033	0.787	1.235	1.694	4.253

Performance

	Return	Sharpe	Sortino	Kappa_3	Kappa_4
BH	5.932	0.319	0.129	0.082	0.061
SV	8.598	0.462	0.208	0.132	0.097
AV	9.677***	0.520*	0.225	0.150*	0.112**

Drawdowns



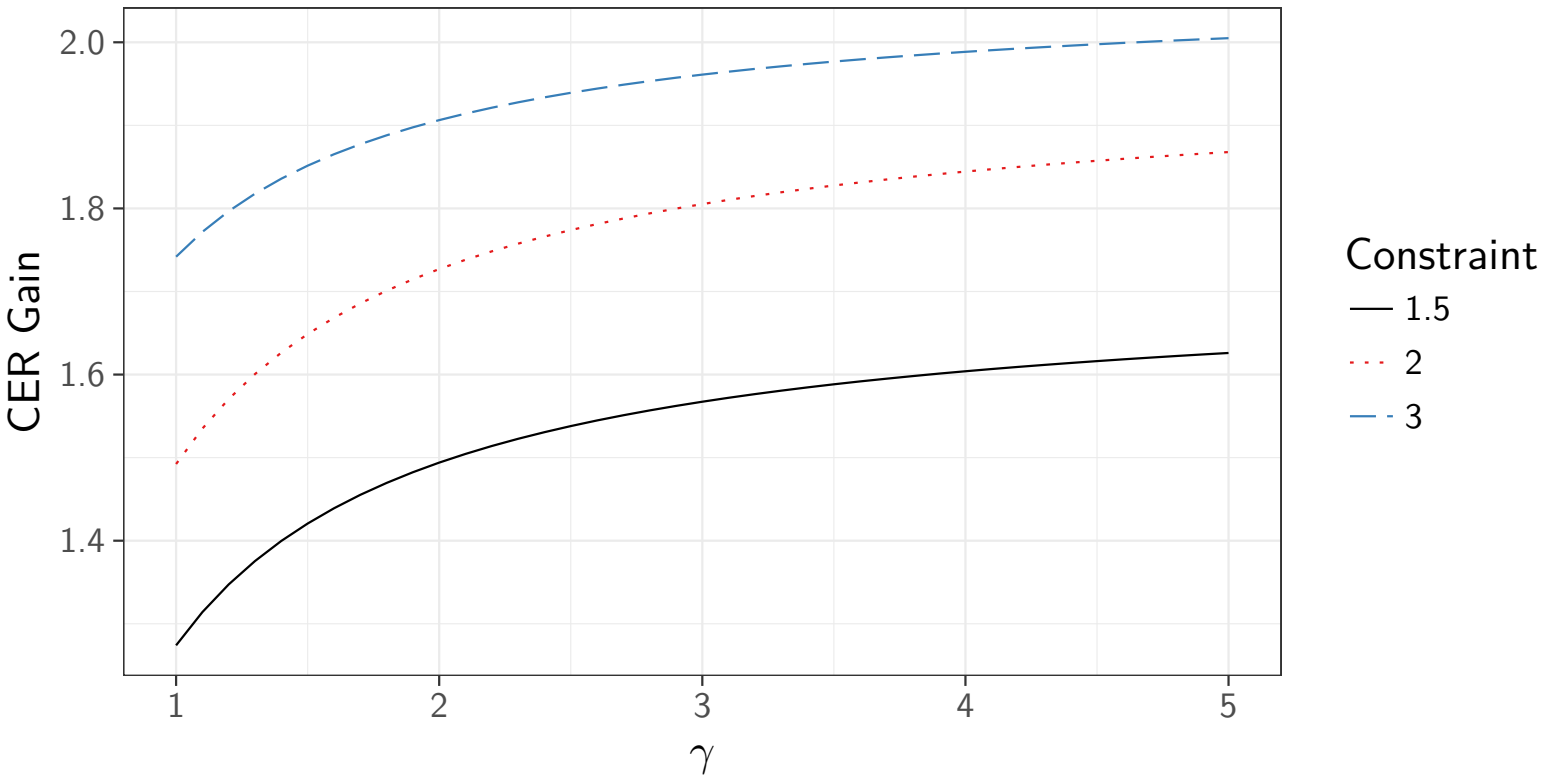
Strategy	N	Max DD	Avg DD	Max Length	Avg Length	Max Recovery	Avg Recovery
BH	82	-84.803	-8.069	188	11.549	154	7.207
SV	65	-63.637	-11.196	246	14.954	135	7.446
AV	87	-60.264	-9.026	205	10.851	135	5.034

Leverage

	Constraint - 1.5					Constraint - 3				
Portfolio	Return	Sharpe	Sortino	$Kappa_3$	$Kappa_4$	Return	Sharpe	Sortino	$Kappa_3$	Kapp
BH	5.932	0.319	0.129	0.082	0.061	5.932	0.319	0.129	0.082	0.06
SV	6.171	0.467	0.200	0.128	0.091	7.606	0.456	0.199	0.129	0.09
AV	7.885***	0.486	0.204	0.133	0.097	9.677***	0.522**	0.226**	0.150**	0.112

Notes: ***,**, and * Significant at the 1, 5, and 10 percent lev

Leverage



Leverage