

ETFW20L - MA / TC

1 TYPE RANK

Table 1: MA strategy results – ETFW20L

		Performance					Parameters							Descriptive	
		IR	SR	aRC	aSD	Sigs.	Long-term lag				Band			N	Share (%)
MA Type							Min	Max	Mean	Med.	Min	Max	Mean		
Panel A. Filter: IR greater than 0															
MA															
	SMA	0.057	-0.12	0.0074	0.11	11.1	5	250	155	180	0.010	0.075	0.053	89	7.6
	WMA	0.057	-0.12	0.0074	0.10	9.4	5	250	137	170	0.025	0.075	0.060	73	6.2
	EMA	0.051	-0.13	0.0063	0.11	7.3	5	250	90	90	0.025	0.075	0.063	54	4.6
Panel B. Filter: IR greater than Q3															
MA															
	WMA	0.041	-0.15	0.0044	0.10	10.9	5	250	144	180	0.025	0.075	0.058	95	8.1
	SMA	0.039	-0.15	0.0042	0.11	12.0	5	250	162	185	0.005	0.075	0.054	120	10.3
	EMA	0.032	-0.16	0.0028	0.11	8.5	5	250	118	130	0.005	0.075	0.062	75	6.4
Panel C. Filter: IR smaller than Q1															
MA															
	SMA	-0.406	-0.75	-0.0741	0.12	100.0	5	180	83	80	0.000	0.075	0.024	92	7.9
	EMA	-0.406	-0.76	-0.0749	0.12	109.3	5	200	84	80	0.000	0.065	0.019	92	7.9
	WMA	-0.426	-0.76	-0.0775	0.12	113.4	5	250	112	110	0.000	0.075	0.020	109	9.3

In this table, we aggregate the standard MA strategy performance and parameter data for ETFW20L across the three MA types. We break down the results into three subgroups: the first representing the data for strategies with positive IR (i.e. beating the BH strategy); the second and third subgroup characterising the top 25% and the bottom 25% of strategies, respectively.

¹ All performance measures use standard formulation defined in Appendix A;

² The performance and parameter statistics are calculated with respect to the subgroup size reported in column «N»;

³ Column «Share (%)» provides a subgroup's share in the whole sample (1170).

2 IR SCORE

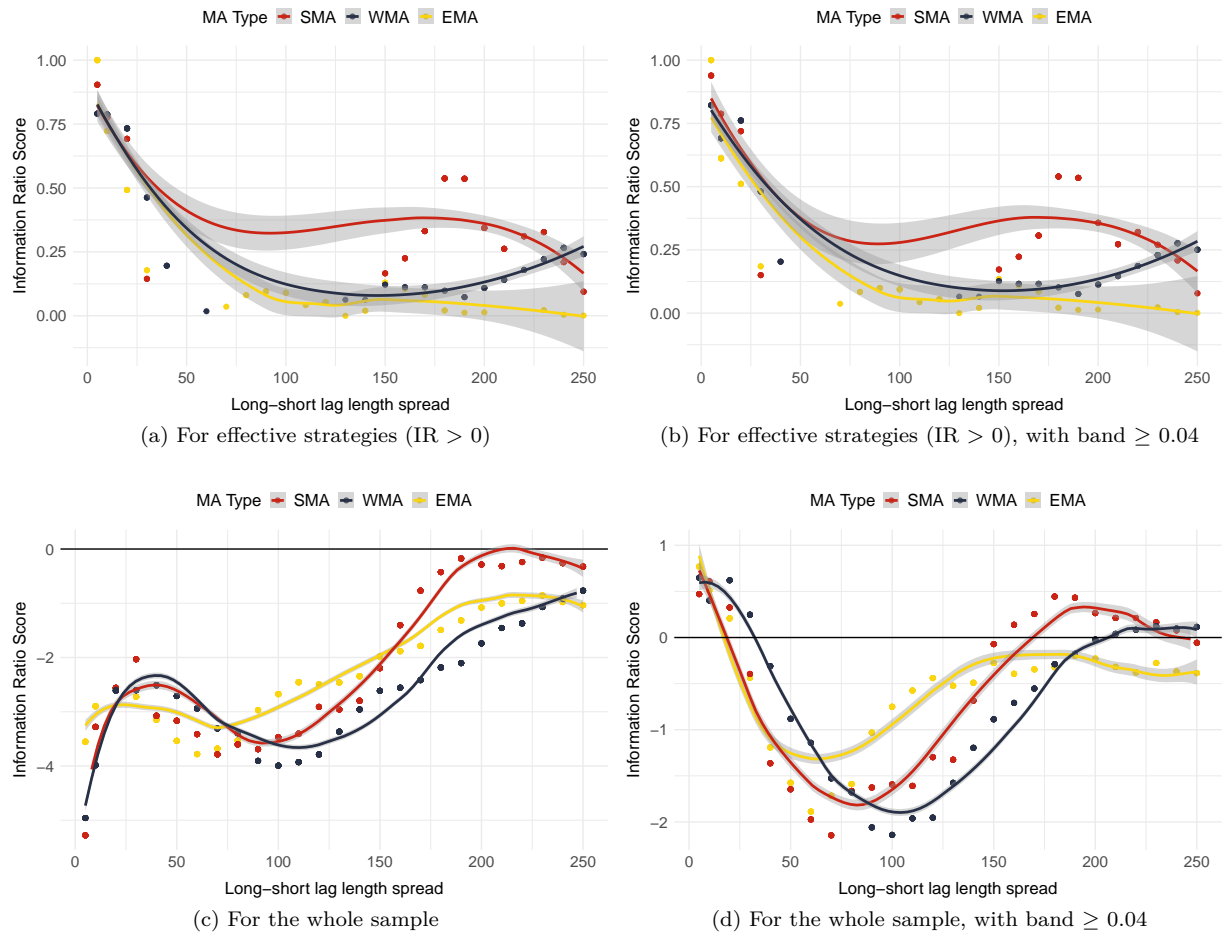


Figure 1: [MA] ETFW20L – IR score by value of the long-term lag.

3 HEATMAPS

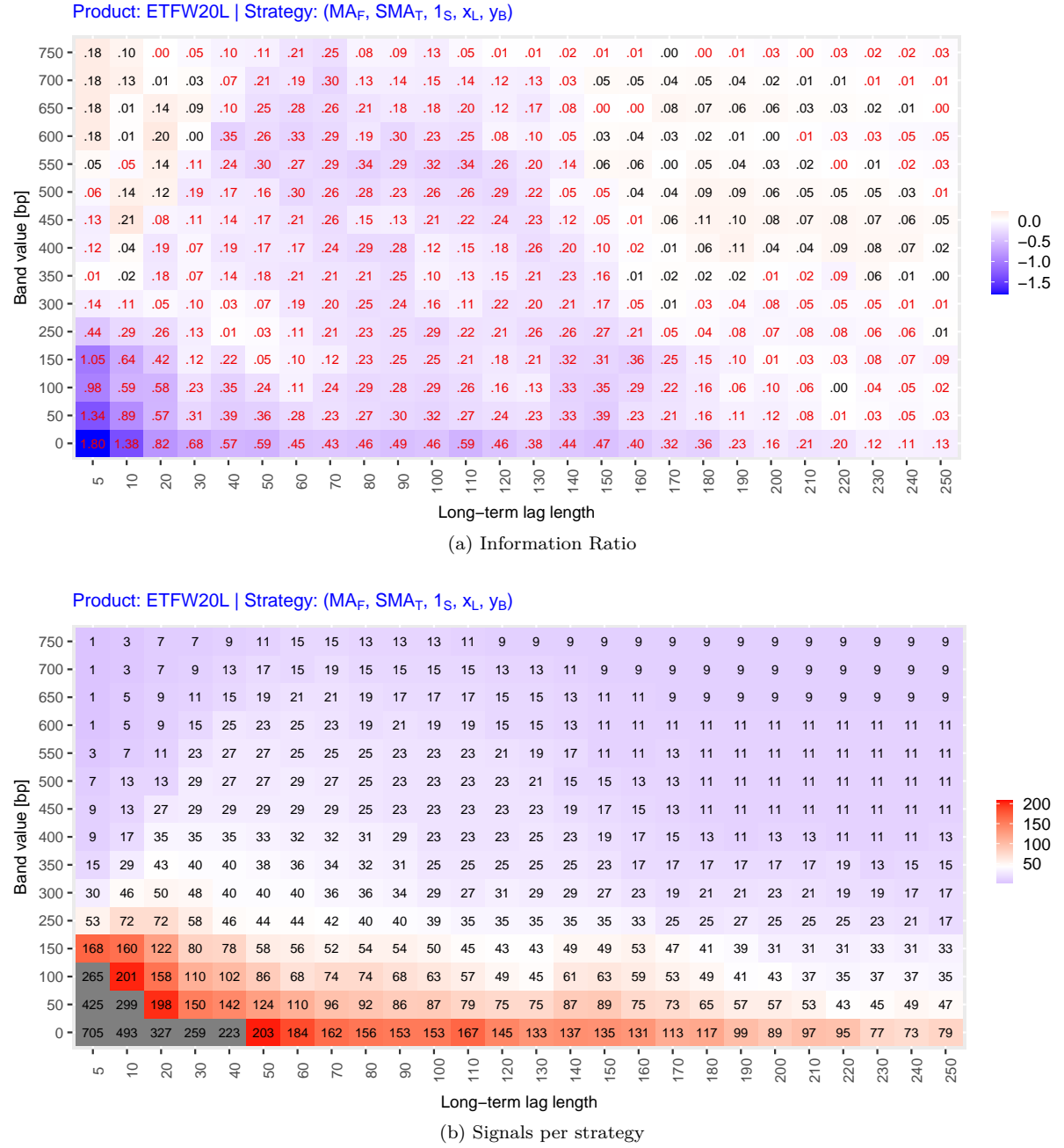


Figure 2: [MA] ETFW20L – IR by lag length and band value.

4 DRAWDOWNS

Table 2: Select strategy results – ETFW20L

ID	Strategy	Performance						Sigs.
		aRC	aSD	IR	SR	MD	MDD	
1	(MA, SMA, 1, 10, 0.045)	0.0341	0.12	0.21	0.12	0.17	4.0	13
2	(MA, SMA, 1, 20, 0.06)	0.0336	0.11	0.20	0.13	0.18	4.1	9
3	(MA, EMA, 1, 30, 0.05)	-0.0245	0.12	-0.12	-0.37	0.40	9.3	17
4	(MA, EMA, 1, 5, 0)	-0.3178	0.16	-1.80	-2.14	0.98	10.4	713
5	(MA, WMA, 1, 5, 0)	-0.3531	0.16	-2.02	-2.30	0.99	10.4	819
6	(Buy-and-hold)	-0.0031	0.21	NA	-0.11	0.44	3.1	NA

This table provides a selection of performance measures for the two best, two worst and the middle standard MA strategy on ETFW20L, in comparison with the BH benchmark.

¹ IR values, as per Appendix A, refer to a strategy's result with respect to the BH benchmark;

² SR shows the performance against a risk-free return for each strategy and the BH benchmark;

³ Colours in column «ID» respond to line colours in the following drawdown plot.

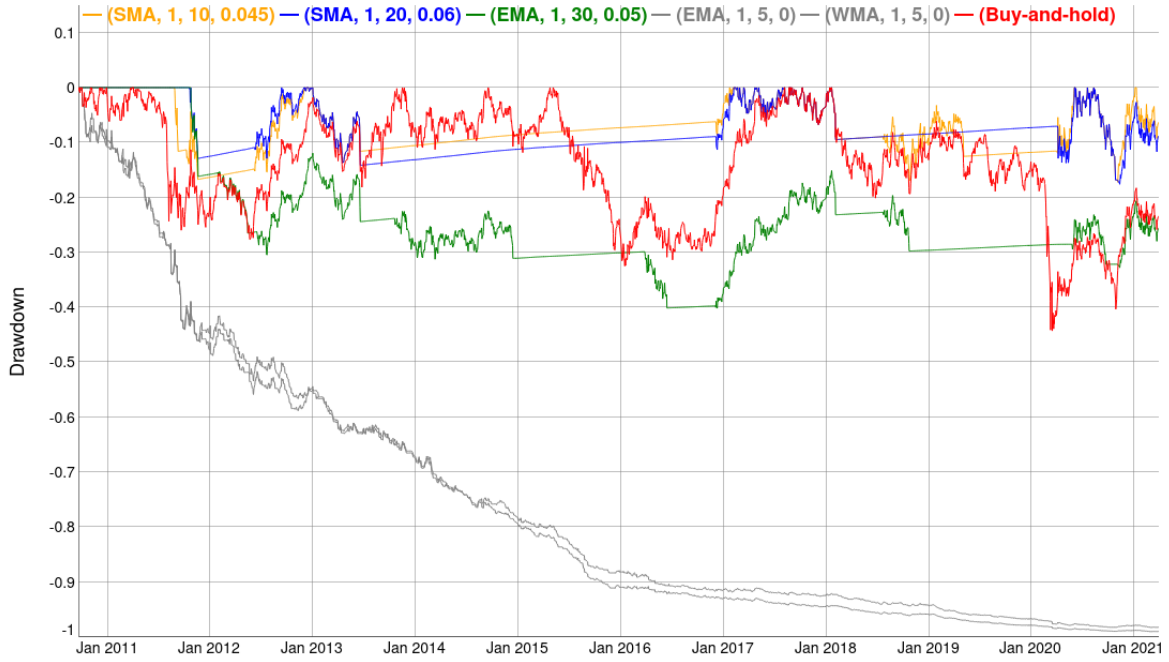


Figure 3: [MA] ETFW20L – Drawdowns for two top (blue and orange), two bottom (gray) and the middle (green) strategy, vs drawdowns for the BH benchmark (red).

ETFW20L - MA / **NO** TC

1 TYPE RANK

Table 1: MA strategy results – ETFW20L

MA Type	Performance					Parameters							Descriptive	
	IR	SR	aRC	aSD	Sigs.	Long-term lag				Band			N	Share (%)
						Min	Max	Mean	Med.	Min	Max	Mean		
Panel A. Filter: IR greater than 0														
MA														
SMA	0.060	-0.106	0.0083	0.11	25	5	250	159	190	0.000	0.075	0.043	172	14.7
WMA	0.059	-0.107	0.0082	0.11	23	5	250	136	165	0.000	0.075	0.049	122	10.4
EMA	0.053	-0.119	0.0069	0.11	21	5	250	130	150	0.000	0.075	0.047	99	8.5
Panel B. Filter: IR greater than Q3														
MA														
SMA	0.078	-0.076	0.0115	0.11	23	5	250	154	185	0.000	0.075	0.042	126	10.8
WMA	0.073	-0.084	0.0106	0.11	17	5	250	133	160	0.005	0.075	0.052	95	8.1
EMA	0.070	-0.089	0.0100	0.11	21	5	250	105	100	0.000	0.075	0.048	69	5.9
Panel C. Filter: IR smaller than Q1														
MA														
WMA	-0.184	-0.455	-0.0344	0.12	58	5	240	113	110	0.000	0.075	0.039	121	10.3
SMA	-0.187	-0.465	-0.0350	0.12	61	5	170	92	90	0.000	0.075	0.037	102	8.7
EMA	-0.187	-0.467	-0.0352	0.12	69	5	170	81	80	0.000	0.070	0.033	70	6.0

In this table, we aggregate the standard MA strategy performance and parameter data for ETFW20L across the three MA types. We break down the results into three subgroups: the first representing the data for strategies with positive IR (i.e. beating the BH strategy); the second and third subgroup characterising the top 25% and the bottom 25% of strategies, respectively.

¹ All performance measures use standard formulation defined in Appendix A;

² The performance and parameter statistics are calculated with respect to the subgroup size reported in column «N»;

³ Column «Share (%)» provides a subgroup's share in the whole sample (1170);

⁴ Transaction costs are not included.

2 IR SCORE

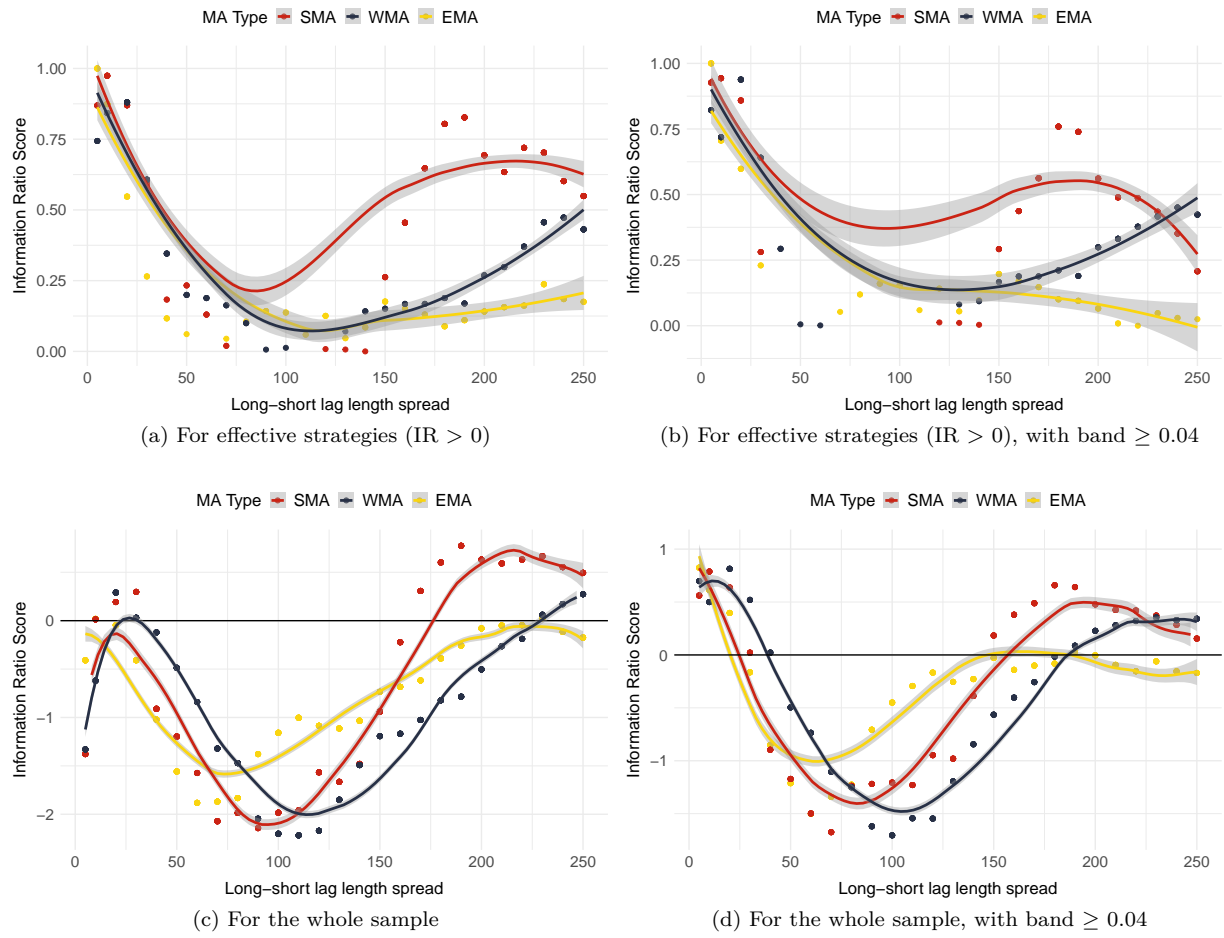


Figure 1: $[MA, -tc]$ ETFW20L – IR score by value of the long-term lag.

3 HEATMAPS

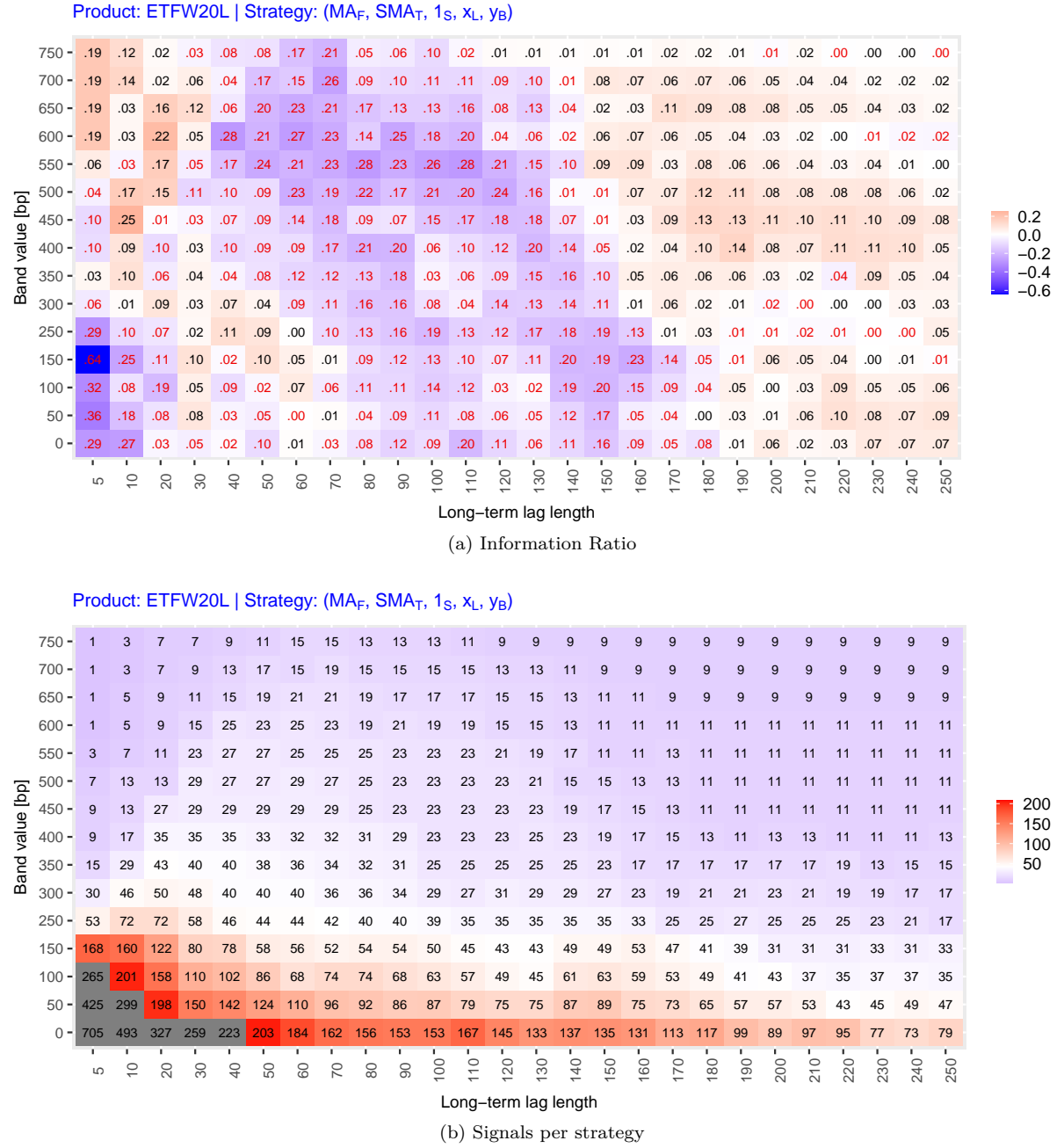


Figure 2: [MA, -tc] ETFW20L – IR by lag length and band value.

4 DRAWDOWNS

Table 2: Select strategy results – ETFW20L

ID	Strategy	Performance						Sigs.
		aRC	aSD	IR	SR	MD	MDD	
1	(MA, SMA, 1, 10, 0.045)	0.0409	0.12	0.250	0.17	0.16	4.0	13
2	(MA, WMA, 1, 20, 0.045)	0.0369	0.12	0.227	0.14	0.17	4.0	13
3	(MA, SMA, 1, 220, 0.035)	-0.0100	0.11	-0.041	-0.28	0.40	8.1	19
4	(MA, WMA, 1, 5, 0.015)	-0.0876	0.15	-0.576	-0.71	0.68	9.9	102
5	(MA, SMA, 1, 5, 0.015)	-0.0981	0.15	-0.641	-0.79	0.69	10.4	168
6	(Buy-and-hold)	-0.0026	0.21	NA	-0.11	0.44	3.1	NA

This table provides a selection of performance measures for the two best, two worst and the middle standard MA strategy on ETFW20L, in comparison with the BH benchmark.

¹ IR values, as per Appendix A, refer to a strategy's result with respect to the BH benchmark;

² SR shows the performance against a risk-free return for each strategy and the BH benchmark;

³ Colours in column «ID» respond to line colours in the following drawdown plot;

⁴ Transaction costs are not included.



Figure 3: [MA, -tc] ETFW20L – Drawdowns for two top (blue and orange), two bottom (gray) and the middle (green) strategy, vs drawdowns for the BH benchmark (red).

ETFW20L - QUIMA / TC

1 TYPE RANK

Table 1: QUIMA strategy results – ETFW20L

MA Type	Performance						Parameters							Descriptive	
	IR	SR	aRC	aSD	Sigs.	Long-term lag				Band			N	Share (%)	
						Min	Max	Mean	Med.	Min	Max	Mean			
Panel A. Filter: IR greater than 0															
MA															
SMA	0.057	-0.116	0.0074	0.11	11.1	5	250	155	180	0.010	0.075	0.053	89	7.6	
WMA	0.057	-0.117	0.0074	0.10	9.4	5	250	137	170	0.025	0.075	0.060	73	6.2	
EMA	0.051	-0.125	0.0063	0.11	7.3	5	250	90	90	0.025	0.075	0.063	54	4.6	
QUIMA															
WMA	0.081	-0.056	0.0120	0.11	14.7	5	250	126	145	0.025	0.075	0.063	86	7.4	
SMA	0.077	-0.072	0.0107	0.12	18.3	5	250	148	180	0.015	0.075	0.057	90	7.7	
EMA	0.073	-0.084	0.0105	0.10	19.2	5	250	140	170	0.010	0.075	0.051	93	7.9	
Panel B. Filter: IR greater than Q ₃															
MA															
WMA	0.041	-0.145	0.0044	0.10	10.9	5	250	144	180	0.025	0.075	0.058	95	8.1	
SMA	0.039	-0.146	0.0042	0.11	12.0	5	250	162	185	0.005	0.075	0.054	120	10.3	
EMA	0.032	-0.158	0.0028	0.11	8.5	5	250	118	130	0.005	0.075	0.062	75	6.4	
QUIMA															
WMA	0.074	-0.069	0.0107	0.11	15.3	5	250	130	150	0.025	0.075	0.062	93	7.9	
SMA	0.070	-0.084	0.0096	0.11	18.3	5	250	153	190	0.015	0.075	0.056	97	8.3	
EMA	0.065	-0.101	0.0091	0.10	19.2	5	250	144	170	0.010	0.075	0.052	103	8.8	
Panel C. Filter: IR smaller than Q ₁															
MA															
SMA	-0.406	-0.745	-0.0741	0.12	100.0	5	180	83	80	0.000	0.075	0.024	92	7.9	
EMA	-0.406	-0.760	-0.0749	0.12	109.3	5	200	84	80	0.000	0.065	0.019	92	7.9	
WMA	-0.426	-0.763	-0.0775	0.12	113.4	5	250	112	110	0.000	0.075	0.020	109	9.3	
QUIMA															
SMA	-0.718	-1.012	-0.1308	0.15	220.0	5	250	96	90	0.000	0.060	0.017	99	8.5	
WMA	-0.805	-1.107	-0.1482	0.15	260.1	5	250	105	100	0.000	0.070	0.017	110	9.4	
EMA	-0.831	-1.171	-0.1556	0.15	291.7	5	250	87	70	0.000	0.070	0.014	84	7.2	

In this table, we aggregate the QUIMA strategy performance and parameter data for ETFW20L across the three MA types. We break down the results into three subgroups: the first representing the data for strategies with positive IR (i.e. beating the BH strategy); the second and third subgroup characterising the top 25% and the bottom 25% of strategies, respectively.

¹ All performance measures use standard formulation defined in Appendix A;

² The performance and parameter statistics are calculated with respect to the subgroup size reported in column «N»;

³ Column «Share (%)» provides a subgroup's share in the whole sample (1170).

2 IR SCORE

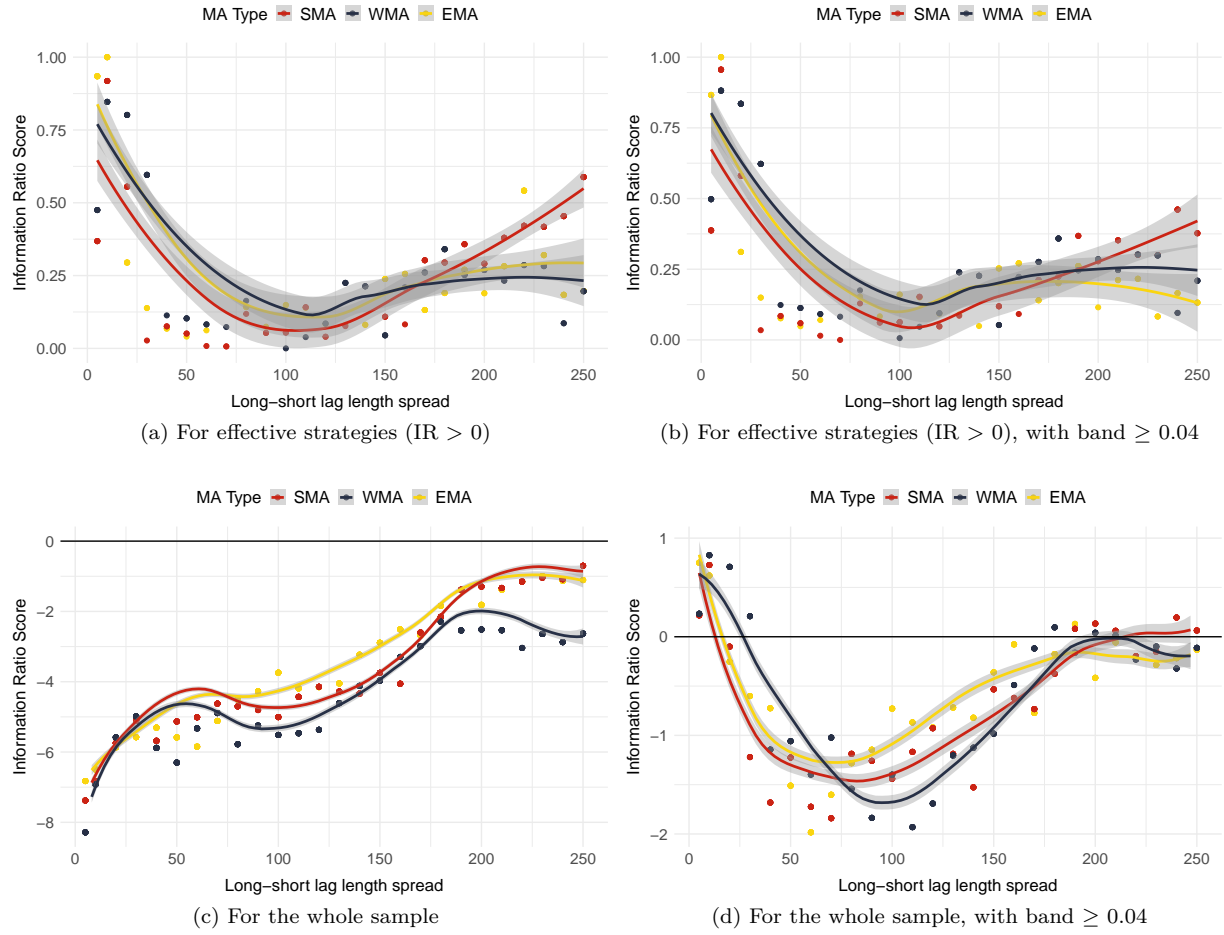


Figure 1: [QUIMA] ETFW20L – IR score by value of the long-term lag.

3 HEATMAPS

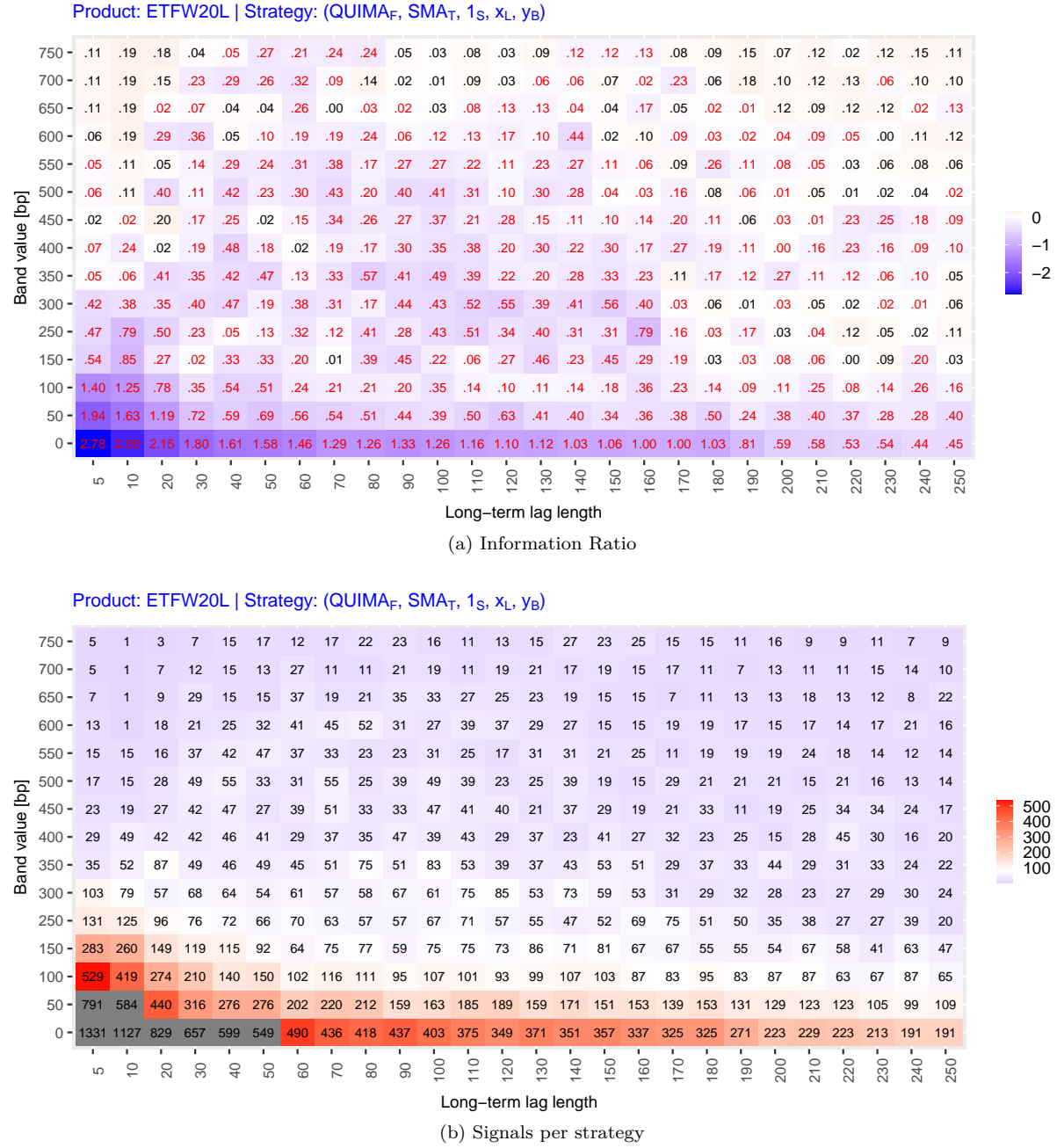


Figure 2: [QUIMA] IR by lag length and band value.

4 DRAWDOWNS

Table 2: Select strategy results – ETFW20L

ID	Strategy	Performance						Sigs.
		aRC	aSD	IR	SR	MD	MDD	
1	(QUIMA, EMA, 1, 5, 0.065)	0.0408	0.077	0.22	0.273	0.19	0.3	5
2	(QUIMA, SMA, 1, 20, 0.045)	0.0300	0.136	0.20	0.075	0.26	3.3	27
3	(QUIMA, SMA, 1, 210, 0.04)	-0.0352	0.071	-0.16	-0.773	0.37	8.6	28
4	(QUIMA, WMA, 1, 5, 0)	-0.6168	0.195	-3.06	-3.266	1.00	10.4	1745
5	(QUIMA, EMA, 1, 5, 0)	-0.6377	0.197	-3.10	-3.333	1.00	10.4	1757
6	(Buy-and-hold)	-0.0031	0.211	NA	-0.108	0.44	3.1	NA

This table provides a selection of performance measures for the two best, two worst and the middle QUIMA strategy on ETFW20L, in comparison with the BH benchmark.

¹ IR values, as per Appendix A, refer to a strategy's result with respect to the BH benchmark;

² SR shows the performance against a risk-free return for each strategy and the BH benchmark;

³ Colours in column «ID» respond to line colours in the following drawdown plot.



Figure 3: [QUIMA] Drawdowns for two top (blue and orange), two bottom (gray) and the middle (green) strategy, vs drawdowns for the BH benchmark (red).

ETFW20L - QUIMA / TC

1 TYPE RANK

Table 1: QUIMA strategy results – ETFW20L

MA Type	Performance					Parameters							Descriptive	
	IR	SR	aRC	aSD	Sigs.	Long-term lag				Band			N	Share (%)
						Min	Max	Mean	Med.	Min	Max	Mean		
Panel A. Filter: IR greater than 0														
MA														
SMA	0.060	-0.106	0.0083	0.11	25	5	250	159	190	0.000	0.075	0.043	172	14.7
WMA	0.059	-0.107	0.0082	0.11	23	5	250	136	165	0.000	0.075	0.049	122	10.4
EMA	0.053	-0.119	0.0069	0.11	21	5	250	130	150	0.000	0.075	0.047	99	8.5
QUIMA														
SMA	0.098	-0.041	0.0145	0.12	43	5	250	144	170	0.005	0.075	0.044	161	13.8
EMA	0.097	-0.044	0.0147	0.11	56	5	250	135	155	0.005	0.075	0.040	174	14.9
WMA	0.095	-0.038	0.0142	0.12	41	5	250	124	140	0.005	0.075	0.050	150	12.8
Panel B. Filter: IR greater than Q ₃														
MA														
SMA	0.078	-0.076	0.0115	0.11	23	5	250	154	185	0.000	0.075	0.042	126	10.8
WMA	0.073	-0.084	0.0106	0.11	17	5	250	133	160	0.005	0.075	0.052	95	8.1
EMA	0.070	-0.089	0.0100	0.11	21	5	250	105	100	0.000	0.075	0.048	69	5.9
QUIMA														
SMA	0.137	0.019	0.0214	0.12	39	5	250	141	180	0.005	0.075	0.047	97	8.3
EMA	0.135	0.020	0.0215	0.11	53	5	250	132	150	0.005	0.075	0.039	107	9.1
WMA	0.132	0.026	0.0209	0.11	39	5	250	108	120	0.005	0.075	0.053	89	7.6
Panel C. Filter: IR smaller than Q ₁														
MA														
WMA	-0.184	-0.455	-0.0344	0.12	58	5	240	113	110	0.000	0.075	0.039	121	10.3
SMA	-0.187	-0.465	-0.0350	0.12	61	5	170	92	90	0.000	0.075	0.037	102	8.7
EMA	-0.187	-0.467	-0.0352	0.12	69	5	170	81	80	0.000	0.070	0.033	70	6.0
QUIMA														
SMA	-0.288	-0.503	-0.0493	0.14	154	5	230	91	90	0.000	0.075	0.033	111	9.5
EMA	-0.320	-0.573	-0.0571	0.14	233	5	230	96	90	0.000	0.075	0.026	76	6.5
WMA	-0.325	-0.557	-0.0563	0.14	211	5	250	110	110	0.000	0.075	0.028	106	9.1

In this table, we aggregate the QUIMA strategy performance and parameter data for ETFW20L across the three MA types. We break down the results into three subgroups: the first representing the data for strategies with positive IR (i.e. beating the BH strategy); the second and third subgroup characterising the top 25% and the bottom 25% of strategies, respectively.

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2 IR SCORE

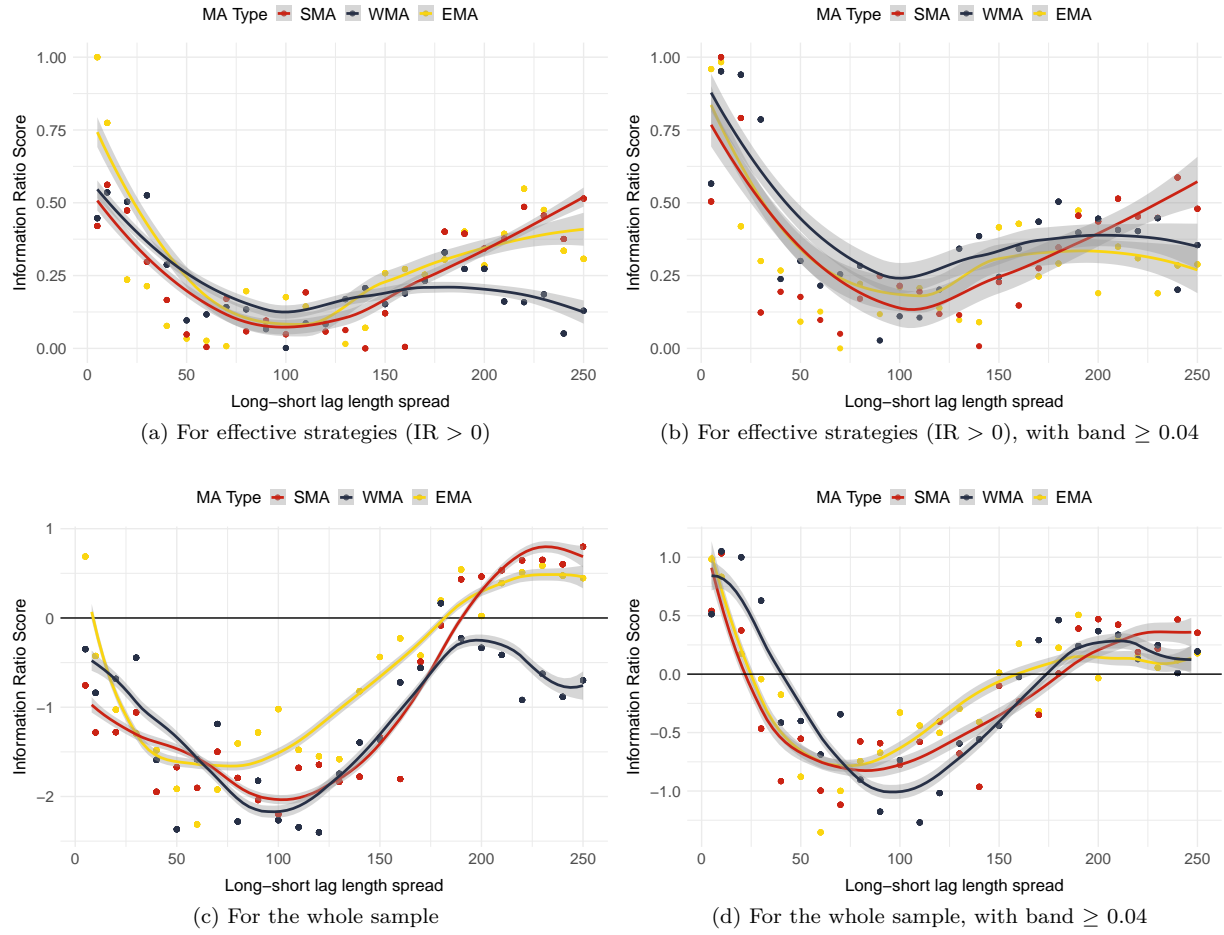


Figure 1: [QUIMA, -tc] ETFW20L – IR score by value of the long-term lag.

3 HEATMAPS

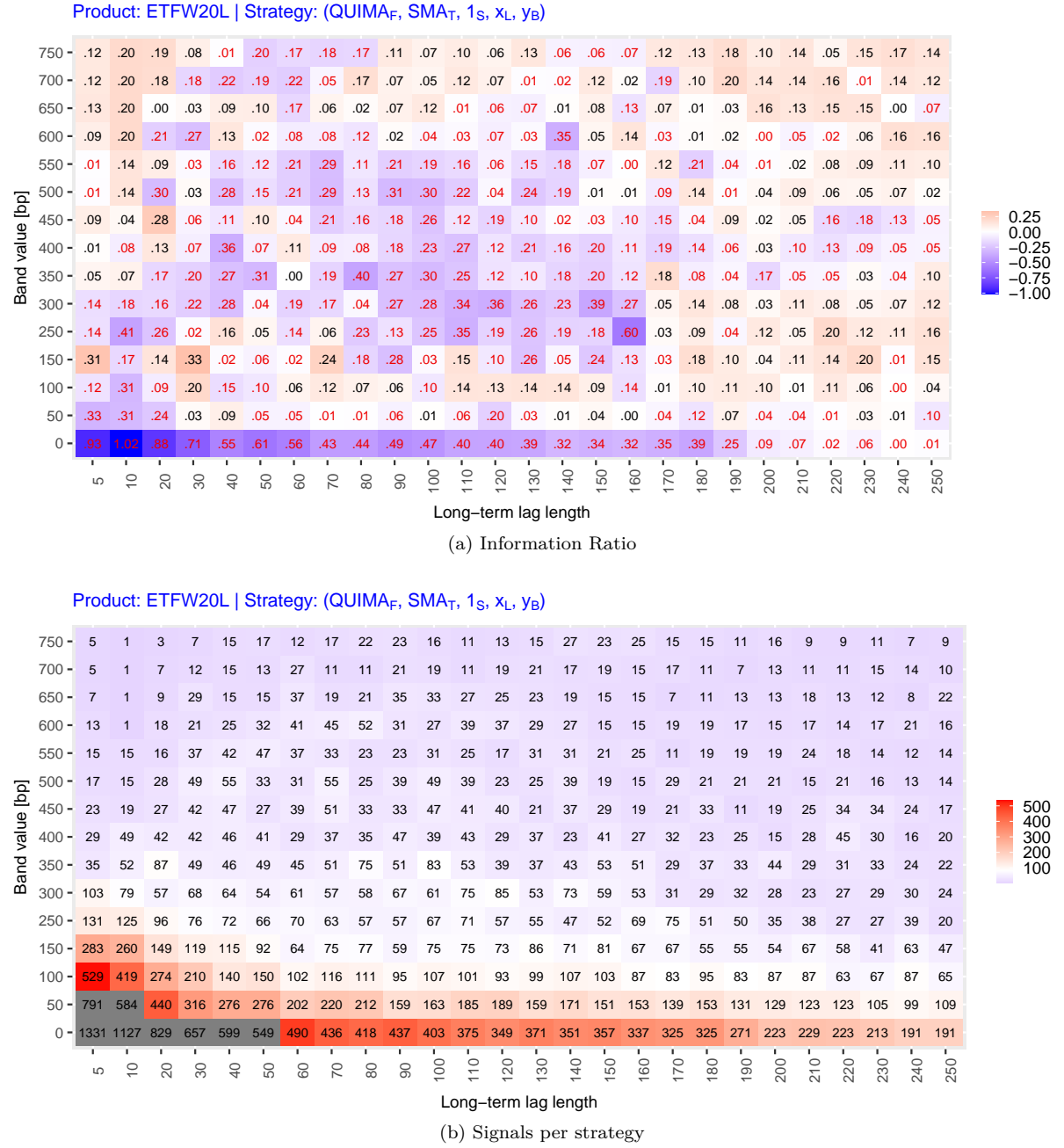


Figure 2: [QUIMA] IR by lag length and band value.

4 DRAWDOWNS

Table 2: Select strategy results – ETFW20L

ID	Strategy	Performance						Sigs.
		aRC	aSD	IR	SR	MD	MDD	
1	(QUIMA, EMA, 1, 5, 0.015)	0.0541	0.161	0.385	0.21	0.32	5.3	355
2	(QUIMA, SMA, 1, 30, 0.015)	0.0503	0.143	0.330	0.21	0.21	3.1	119
3	(QUIMA, SMA, 1, 150, 0.045)	-0.0083	0.093	-0.029	-0.30	0.20	9.8	29
4	(QUIMA, WMA, 1, 10, 0)	-0.1923	0.159	-1.088	-1.34	0.90	10.2	1383
5	(QUIMA, EMA, 1, 10, 0)	-0.2080	0.164	-1.184	-1.39	0.92	10.3	1375
6	(Buy-and-hold)	-0.0026	0.211	NA	-0.11	0.44	3.1	NA

This table provides a selection of performance measures for the two best, two worst and the middle QUIMA strategy on ETFW20L, in comparison with the BH benchmark.

¹ IR values, as per Appendix A, refer to a strategy's result with respect to the BH benchmark;

² SR shows the performance against a risk-free return for each strategy and the BH benchmark;

³ Colours in column «ID» respond to line colours in the following drawdown plot;

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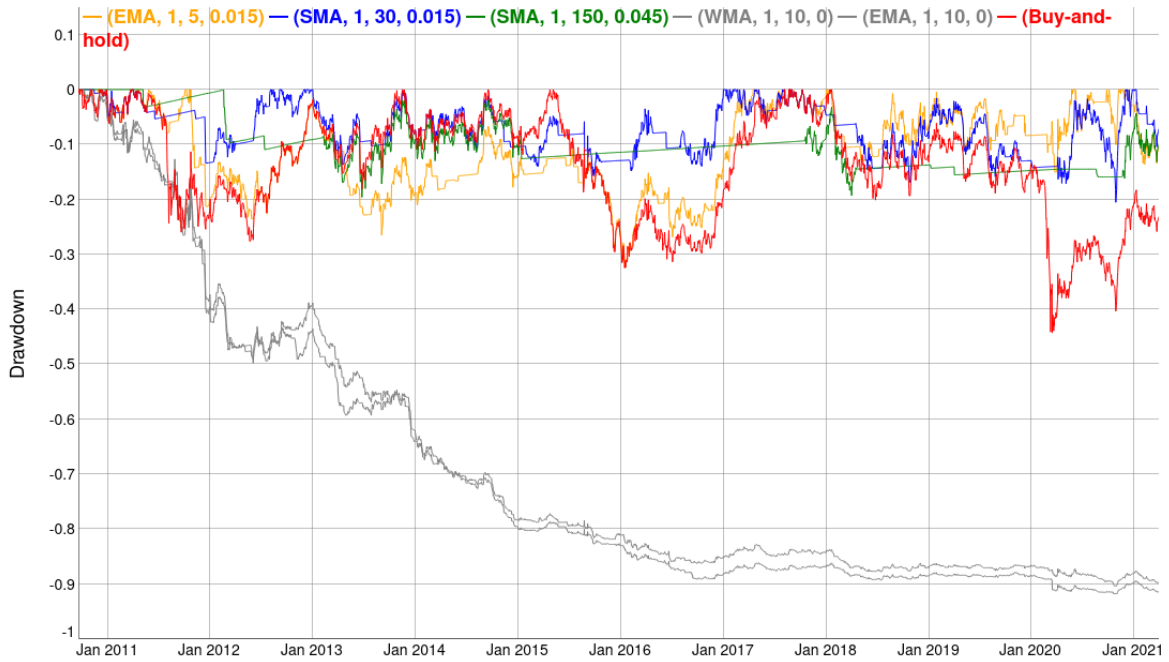


Figure 3: [QUIMA, -tc] Drawdowns for two top (blue and orange), two bottom (gray) and the middle (green) strategy, vs drawdowns for the BH benchmark (red).