国泰君安191因子回测-141-150

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1 Alpha141

$$Alpha = (RANK(CORR(RANK(HIGH), RANK(MEAN(VOLUME, 15)), 9)) * -1) \tag{1}$$

dates	long(M)	short(M)	pnl(M)	%ret	%tvr	shrp (IR)	%dd	%win	bpmrgn	fitness	Coverage	%posret	%inxret	%negret	IC
20100104-20101231	10.0	-10.0	0.33	1.68	43.69	0.96(0.061)	3.64	0.5	1.54	0.19	617 X 619	16.21	14.01	-12.84	0.0026
20110101-20111231	10.0	-10.0	0.4	2.04	42.46	1.36(0.086)	1.7	0.52	1.93	0.3	743 X 743	-30.59	-39.34	34.68	0.0034
20120101-20121231	10.0	-10.0	0.77	3.94	42.19	2.94(0.186)	1.52	0.56	3.74	0.9	932 X 934	9.56	3.25	-1.68	0.0077
20130101-20131231	10.0	-10.0	-0.18	-0.92	41.02	-0.65(-0.041)	3.97	0.47	-0.9	-0.1	1112 X 1115	23.59	19.03	-25.44	-0.0016
20140101-20141231	10.0	-10.0	0.23	1.16	40.84	1.04(0.066)	1.64	0.53	1.14	0.17	1066 X 1068	37.71	35.54	-35.39	0.0019
20150101-20151231	10.0	-10.0	0.61	3.17	41.32	1.19(0.075)	4.71	0.57	3.04	0.33	995 X 997	79.76	46.78	-73.47	0.0049
20160101-20161231	10.0	-10.0	0.71	3.64	40.74	2.89(0.183)	1.54	0.62	3.58	0.86	1211 X 1212	-5.73	-15.42	13.01	0.0062
20170101-20171231	10.0	-10.0	0.46	2.34	40.14	1.66(0.105)	2.11	0.54	2.33	0.4	1428 X 1432	-14.12	0.88	18.8	0.0042
20180101-20181231	10.0	-10.0	1.57	8.1	40.34	7.37(0.466)	0.79	0.67	8.03	3.3	1612 X 1619	-27.25	-38.75	43.45	0.0138
20190101-20191231	10.0	-10.0	1.24	6.33	40.32	5.18(0.328)	1.04	0.61	6.28	2.05	1769 X 1775	30.71	26.71	-18.04	0.0099
20200101-20200331	10.0	-10.0	0.26	5.52	40.01	2.76(0.175)	1.89	0.59	5.52	1.02	1815 X 1827	-3.02	-12.47	14.06	0.0082
20100104-20200331	10.0	-10.0	6.39	3.21	41.27	2.06(0.13)	4.71	0.56	3.11	0.57	1165 X 1167	11.63	4.85	-5.21	0.0054

Figure 1: 回测结果

Corr	ISSharpe	SemiOS	OSSharpe	Fitness	OSdays	ID
0.5237	4.64	9.18	3.58	2.89	110	214447_pv_model_1_2_mod_191101_5
0.519	5.61	6.33	5.95	3.89	97	215063_qh19
0.5164	4.18	5.6	nan	1.67	97	215063_qh208

Figure 2: 相关性结果

2 Alpha142

$$\begin{aligned} Alpha = &(((-1 * RANK(TSRANK(CLOSE, 10))) * RANK(DELTA(DELTA(CLOSE, 1), 1))) * \\ &RANK(TSRANK((VOLUME/MEAN(VOLUME, 20)), 5))) \end{aligned} \tag{2}$$

dates	long(M)	short(M)	pnl(M)	%ret	%tvr	shrp (IR)	%dd	%win	bpmrgn	fitness	Coverage	%posret	%inxret	%negret	IC
20100104-20101231	10.0	-10.0	6.09	31.44	134.65	8.18(0.517)	1.97	0.72	9.34	3.95	884 X 416	29.48	14.01	33.4	0.0495
20110101-20111231	10.0	-10.0	3.54	18.12	134.72	6.39(0.404)	2.48	0.7	5.38	2.34	1064 X 495	-25.51	-39.34	61.77	0.032
20120101-20121231	10.0	-9.99	3.11	15.99	134.76	6.21(0.393)	2.5	0.67	4.75	2.14	1308 X 615	11.67	3.25	20.31	0.0292
20130101-20131231	10.0	-10.0	3.73	19.58	132.41	6.36(0.402)	1.9	0.68	5.91	2.44	1550 X 698	34.25	19.03	4.89	0.0301
20140101-20141231	10.0	-10.0	3.96	20.22	133.75	6.58(0.416)	1.91	0.68	6.05	2.56	1483 X 678	46.41	35.54	-5.98	0.0312
20150101-20151231	9.98	-10.03	5.12	26.27	131.47	4.34(0.275)	11.26	0.62	7.98	1.94	1360 X 676	87.44	46.78	-34.63	0.0304
20160101-20161231	10.0	-9.99	2.21	11.34	134.75	3.51(0.222)	10.92	0.65	3.37	1.02	1677 X 773	-4.87	-15.42	27.56	0.0229
20170101-20171231	10.0	-10.0	1.87	9.6	134.22	3.34(0.211)	3.07	0.67	2.86	0.89	1999 X 885	-12.74	0.88	31.93	0.0188
20180101-20181231	10.0	-9.99	3.14	16.17	135.05	5.33(0.337)	2.7	0.64	4.79	1.84	2224 X 1025	-30.87	-38.75	63.22	0.0247
20190101-20191231	10.0	-10.0	2.64	13.55	133.5	5.07(0.321)	2.24	0.64	4.06	1.62	2432 X 1121	28.11	26.71	-1.03	0.0197
20200101-20200331	10.01	-10.02	0.23	4.94	132.07	1.15(0.073)	3.54	0.5	1.48	0.22	2484 X 1165	-10.19	-12.47	19.95	0.0076
20100104-20200331	10.0	-10.0	35.64	17.91	133.88	5.1(0.323)	11.73	0.66	5.35	1.87	1619 X 748	15.68	4.85	20.12	0.0283

Figure 3: 回测结果

Corr	ISSharpe	SemiOS	OSSharpe	Fitness	OSdays	ID
0.9084	4.45	2.69	0.08	1.44	175	211930_h_ori44
0.7694	4.93	7.6	2.35	1.8	110	214368_fac125
0.7583	8.91	9.18	1.66	4.54	133	213654_h9178

Figure 4: 相关性结果

3 Alpha143

$$Alpha = CLOSE > DELAY(CLOSE,1) ? (CLOSE - DELAY(CLOSE,1))/DELAY(CLOSE,1) * SELF : SELF \tag{3}$$

dates	long(M)	short(M)	pnl(M)	%ret	%tvr	shrp (IR)	%dd	%win	bpmrgn	fitness	Coverage	%posret	%inxret	%negret	IC
20100104-20101231	10.0	-10.0	3.89	20.11	82.41	8.37(0.529)	1.49	0.74	9.76	4.13	769 X 762	32.03	14.01	8.19	0.0339
20110101-20111231	10.0	-10.0	2.56	13.09	77.02	6.84(0.433)	2.08	0.67	6.8	2.82	764 X 761	-22.46	-39.34	48.66	0.023
20120101-20121231	10.0	-10.0	2.21	11.37	77.05	7.4(0.468)	1.16	0.7	5.9	2.84	763 X 760	15.37	3.25	7.36	0.0226
20130101-20131231	10.01	-10.0	2.37	12.43	82.67	6.28(0.397)	0.97	0.67	6.01	2.44	764 X 757	27.27	19.03	-2.43	0.021
20140101-20141231	10.03	-10.0	3.13	15.94	79.67	6.23(0.394)	1.34	0.64	8.0	2.79	762 X 757	55.38	35.54	-23.62	0.0248
20150101-20151231	10.08	-9.99	3.83	19.43	63.23	1.53(0.097)	17.43	0.5	12.37	0.85	760 X 759	78.77	46.78	-40.15	0.0074
20160101-20161231	10.01	-10.0	1.68	8.6	73.91	2.24(0.142)	5.12	0.56	4.65	0.76	759 X 758	1.28	-15.42	15.93	0.0095
20170101-20171231	10.0	-10.0	0.83	4.27	81.43	2.32(0.147)	2.7	0.57	2.1	0.53	757 X 756	-9.66	0.88	18.19	0.0069
20180101-20181231	10.0	-10.01	-1.41	-7.26	74.73	-3.28(-0.207)	15.26	0.39	-3.89	-1.02	754 X 752	-48.78	-38.75	34.18	-0.0154
20190101-20191231	10.0	-10.0	0.2	1.04	84.04	0.56(0.035)	4.48	0.52	0.49	0.06	755 X 747	24.83	26.71	-22.75	0.0029
20200101-20200331	10.0	-10.03	-0.08	-1.81	80.13	-0.71(-0.045)	2.44	0.47	-0.9	-0.11	753 X 743	-30.52	-12.47	26.84	-0.0019
20100104-20200331	10.01	-10.0	19.2	9.62	77.66	2.1(0.133)	17.54	0.59	4.96	0.74	761 X 757	14.39	4.85	4.87	0.0133

Figure 5: 回测结果

Corr	ISSharpe	SemiOS	OSSharpe	Fitness	OSdays	ID
0.6506	2.48	3.4	1.7	1.31	138	213653_h25762
0.637	5.47	7.9	2.89	3.32	140	213539_h12009
0.5891	3.31	1.08	-0.56	1.46	140	213539_h2916

Figure 6: 相关性结果

4 Alpha144

$$\begin{aligned} Alpha = & SUMIF(ABS(CLOSE/DELAY(CLOSE,1)-1)/AMOUNT,20,CLOSE < DELAY(CLOSE,1)) \\ & /COUNT(CLOSE < DELAY(CLOSE,1),20) \end{aligned} \tag{4}$$

dates	long(M)	short(M)	pnl(M)	%ret	%tvr	shrp (IR)	%dd	%win	bpmrgn	fitness	Coverage	%posret	%inxret	%negret	IC
20100104-20101231	10.0	-10.0	1.28	6.61	11.45	1.77(0.112)	9.29	0.63	23.11	1.35	675 X 1094	16.71	14.01	-3.48	0.0152
20110101-20111231	9.97	-10.0	0.8	4.04	9.79	1.35(0.085)	7.65	0.54	16.7	0.87	771 X 1322	-34.7	-39.34	42.76	0.0092
20120101-20121231	9.98	-10.0	0.22	1.1	10.47	0.3(0.019)	9.35	0.56	4.25	0.1	824 X 1508	-0.3	3.25	2.52	0.0054
20130101-20131231	9.99	-10.0	0.28	1.45	10.5	0.29(0.018)	21.91	0.63	5.55	0.11	925 X 1469	15.67	19.03	-12.74	0.0147
20140101-20141231	9.96	-10.0	1.67	8.6	11.76	2.18(0.138)	13.63	0.67	29.0	1.86	932 X 1445	44.52	35.54	-27.33	0.017
20150101-20151231	9.4	-10.0	-5.28	-29.2	17.55	-2.83(-0.179)	88.72	0.52	-63.57	-3.65	774 X 1653	3.93	46.78	-57.79	-0.0032
20160101-20161231	9.67	-10.0	0.92	4.59	16.19	1.04(0.066)	16.46	0.59	11.82	0.56	1032 X 1647	-11.56	-15.42	20.59	0.0127
20170101-20171231	9.71	-10.0	-5.39	-28.08	14.62	-6.41(-0.406)	56.68	0.36	-76.67	-8.89	1141 X 1925	-75.46	0.88	18.04	-0.0127
20180101-20181231	9.47	-10.0	-21.55	-114.64	13.72	-12.67(-0.801)	233.38	0.23	-331.91	-36.62	1091 X 2296	-281.94	-38.75	45.39	-0.0289
20190101-20191231	9.86	-10.0	-25.8	-131.95	12.89	-6.43(-0.406)	266.59	0.29	-413.05	-20.56	1491 X 2113	-249.73	26.71	-18.1	-0.0241
20200101-20200331	9.99	-10.0	0.59	12.73	12.9	1.61(0.102)	7.98	0.55	39.38	1.59	1329 X 2350	-3.35	-12.47	28.72	0.0092
20100104-20200331	9.81	-10.0	-52.28	-26.87	12.88	-2.96(-0.187)	610.71	0.5	-82.35	-4.28	974 X 1664	-55.22	4.85	1.64	0.0007

Figure 7: 回测结果

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
-0.2196	2.19	6.16	6.44	1.55	141	213518_h8525
-0.2383	3.73	5.72	6.27	1.35	95	215386_fac148
-0.2622	4.7	6.97	5.06	3.94	180	211919_my_74

Figure 8: 相关性结果

5 Alpha145

$$Alpha = (MEAN(VOLUME, 9) - MEAN(VOLUME, 26))/MEAN(VOLUME, 12) * 100 \tag{5}$$

dates	long(M)	short(M)	pnl(M)	%ret	%tvr	shrp (IR)	%dd	%win	bpmrgn	fitness	Coverage	%posret	%inxret	%negret	IC
20100104-20101231	10.0	-10.0	-0.94	-4.83	29.1	-1.55(-0.098)	13.94	0.45	-6.64	-0.63	612 X 565	5.09	14.01	-14.75	-0.009
20110101-20111231	10.0	-10.0	-0.58	-2.95	27.4	-1.08(-0.068)	10.43	0.47	-4.31	-0.35	747 X 670	-39.99	-39.34	34.08	-0.0066
20120101-20121231	10.0	-10.0	-1.19	-6.11	26.74	-2.35(-0.149)	12.8	0.37	-9.15	-1.12	963 X 849	-6.0	3.25	-6.23	-0.0132
20130101-20131231	10.0	-10.0	-1.49	-7.81	24.47	-2.8(-0.177)	15.9	0.39	-12.77	-1.58	1163 X 1053	14.01	19.03	-29.63	-0.0129
20140101-20141231	10.0	-10.0	0.48	2.43	25.08	0.82(0.052)	7.88	0.47	3.87	0.26	1120 X 996	35.58	35.54	-30.73	0.0001
20150101-20151231	10.0	-9.99	-3.05	-15.69	26.8	-2.99(-0.189)	31.94	0.41	-23.37	-2.29	1014 X 938	52.27	46.78	-83.67	-0.0162
20160101-20161231	10.0	-10.0	-1.27	-6.49	24.64	-2.28(-0.144)	16.0	0.44	-10.54	-1.17	1232 X 1164	-22.96	-15.42	9.97	-0.0114
20170101-20171231	10.0	-10.0	-0.41	-2.1	24.62	-0.69(-0.044)	8.2	0.42	-3.41	-0.2	1512 X 1324	-24.19	0.88	19.99	-0.0071
20180101-20181231	10.0	-10.0	-1.99	-10.24	24.19	-4.1(-0.259)	20.61	0.39	-16.94	-2.67	1706 X 1508	-50.26	-38.75	29.75	-0.0171
20190101-20191231	10.0	-10.0	-3.59	-18.39	23.73	-8.17(-0.517)	35.93	0.3	-30.99	-7.19	1882 X 1654	-0.19	26.71	-36.58	-0.0266
20200101-20200331	10.0	-10.0	-0.4	-8.56	23.58	-1.85(-0.117)	8.77	0.48	-14.49	-1.12	1890 X 1747	-28.54	-12.47	11.45	-0.0149
20100104-20200331	10.0	-10.0	-14.42	-7.25	25.63	-2.28(-0.144)	147.38	0.41	-11.3	-1.21	1212 X 1088	-4.25	4.85	-10.23	-0.0121

Figure 9: 回测结果

-0.7357	2.19	5.58	2.47	1.17	180	211930_h_ori251
-0.7519	6.7	7.93	4.09	6.19	138	213652_h14208
-0.7723	3.14	5.97	5.13	1.53	108	214732_fac101

Figure 10: 相关性结果

6 Alpha146

$$\begin{aligned} Alpha =& MEAN((CLOSE - DELAY(CLOSE, 1))/DELAY(CLOSE, 1) - SMA((CLOSE - DELAY(CLOSE, 1))/ \\ & DELAY(CLOSE, 1), 61, 2), 20) * ((CLOSE - DELAY(CLOSE, 1))/DELAY(CLOSE, 1) - \\ & SMA((CLOSE - DELAY(CLOSE, 1))/DELAY(CLOSE, 1), 61, 2))/SMA(((CLOSE - DELAY(CLOSE, 1)) \\ & /DELAY(CLOSE, 1) - ((CLOSE - DELAY(CLOSE, 1))/DELAY(CLOSE, 1) - \\ & SMA((CLOSE - DELAY(CLOSE, 1))/DELAY(CLOSE, 1), 61, 2)))^2, 60) \end{aligned} \tag{6}$$

dates	long(M)	short(M)	pnl(M)	%ret	%tvr	shrp (IR)	%dd	%win	bpmrgn	fitness	Coverage	%posret	%inxret	%negret	IC
20100104-20101231	9.99	-10.0	-1.55	-8.03	167.7	-1.28(-0.081)	19.29	0.44	-1.91	-0.28	879 X 907	10.59	14.01	-26.61	-0.0028
20110101-20111231	9.99	-10.0	0.2	1.01	172.36	0.17(0.011)	10.26	0.52	0.23	0.01	1069 X 1053	-39.03	-39.34	40.98	-0.0004
20120101-20121231	9.97	-9.99	-0.82	-4.12	171.06	-0.62(-0.039)	17.5	0.45	-0.99	-0.1	1165 X 1195	-23.66	3.25	15.13	-0.0021
20130101-20131231	9.99	-10.0	0.76	3.96	173.02	0.78(0.05)	5.9	0.52	0.92	0.12	1186 X 1260	29.59	19.03	-21.61	0.0014
20140101-20141231	9.94	-10.0	1.26	6.49	170.72	1.13(0.071)	7.44	0.53	1.52	0.22	1186 X 1318	48.37	35.54	-35.17	0.0013
20150101-20151231	9.77	-9.91	-4.45	-23.28	161.94	-2.49(-0.157)	50.24	0.43	-5.72	-0.94	1240 X 1455	34.82	46.78	-80.28	-0.0091
20160101-20161231	9.97	-9.97	-1.94	-10.01	174.46	-1.51(-0.096)	33.97	0.48	-2.28	-0.36	1398 X 1460	-24.83	-15.42	4.91	-0.0031
20170101-20171231	9.98	-9.97	0.63	3.08	173.44	0.61(0.038)	8.97	0.53	0.75	0.08	1615 X 1612	-23.44	0.88	29.96	0.0007
20180101-20181231	9.96	-9.95	-4.76	-23.86	173.29	-2.43(-0.154)	49.12	0.46	-5.68	-0.9	1792 X 1714	-82.49	-38.75	33.34	-0.0033
20190101-20191231	9.95	-9.99	-0.56	-2.93	173.85	-0.41(-0.026)	21.23	0.52	-0.67	-0.05	1751 X 1858	13.94	26.71	-19.68	-0.0007
20200101-20200331	10.01	-10.02	-0.14	-3.01	172.34	-0.47(-0.03)	6.51	0.47	-0.68	-0.06	1786 X 1896	-38.25	-12.47	32.36	0.0
20100104-20200331	9.95	-9.98	-11.38	-5.71	171.22	-0.82(-0.052)	123.26	0.49	-1.34	-0.15	1339 X 1396	-6.52	4.85	-4.96	-0.0018

Figure 11: 回测结果

-0.119	3.75	9.31	3.14	1.36	105	214822_pv_model_3_mod_gen4_191114_168
-0.1192	5.87	9.67	4.57	3.31	105	214838_pv_model_4_gen2_191114_4
-0.1236	6.08	10.18	5.14	3.58	105	214822_pv_model_3_mod_gen4_191114_37

Figure 12: 相关性结果

7 Alpha147

$$Alpha = REGBETA(MEAN(CLOSE, 12), SEQUENCE(12)) \tag{7}$$

8 Alpha148

$$Alpha = ((RANK(CORR((OPEN), SUM(MEAN(VOLUME, 60), 9), 6)) - RANK((OPEN - TSMIN(OPEN, 14)))) * -1) \tag{8}$$

dates	long(M)	short(M)	pnl(M)	%ret	%tvr	shrp (IR)	%dd	%win	bpmrgn	fitness	Coverage	%posret	%inxret	%negret	IC
20100104-20101231	10.0	-10.0	-1.54	-7.98	62.38	-2.25(-0.142)	17.61	0.43	-5.1	-0.8	259 X 258	7.19	14.01	-23.09	-0.0131
20110101-20111231	10.0	-10.0	-1.94	-9.95	65.14	-3.46(-0.219)	22.04	0.4	-6.12	-1.35	324 X 318	-39.99	-39.34	20.07	-0.0192
20120101-20121231	10.0	-10.0	-0.94	-4.84	61.56	-2.05(-0.13)	10.19	0.47	-3.15	-0.58	545 X 535	1.97	3.25	-11.66	-0.0107
20130101-20131231	10.0	-10.0	-0.23	-1.23	58.34	-0.46(-0.029)	8.27	0.47	-0.84	-0.07	999 X 1003	25.04	19.03	-27.49	-0.0004
20140101-20141231	10.0	-10.0	-1.22	-6.24	57.37	-3.1(-0.196)	16.66	0.41	-4.35	-1.02	910 X 902	34.41	35.54	-46.9	-0.0099
20150101-20151231	9.99	-10.01	-3.46	-17.71	56.74	-3.79(-0.24)	34.58	0.4	-12.48	-2.12	706 X 724	49.52	46.78	-84.85	-0.0206
20160101-20161231	10.0	-10.0	-1.32	-6.78	59.06	-2.79(-0.176)	16.17	0.43	-4.59	-0.94	1007 X 1005	-17.25	-15.42	3.69	-0.0114
20170101-20171231	10.0	-10.0	0.26	1.34	58.59	0.58(0.037)	3.89	0.5	0.92	0.09	1265 X 1211	-13.86	0.88	16.54	-0.0006
20180101-20181231	10.0	-10.0	-0.8	-4.12	59.55	-1.69(-0.107)	9.81	0.41	-2.77	-0.44	1503 X 1450	-36.92	-38.75	28.66	-0.0086
20190101-20191231	10.0	-10.0	-0.62	-3.17	57.13	-1.57(-0.099)	8.15	0.43	-2.22	-0.37	1710 X 1694	24.87	26.71	-31.19	-0.0056
20200101-20200331	10.0	-10.01	-0.04	-0.8	59.8	-0.24(-0.015)	5.86	0.64	-0.53	-0.03	1754 X 1770	-11.17	-12.47	9.57	0.0002
20100104-20200331	10.0	-10.0	-11.86	-5.96	59.59	-2.07(-0.131)	119.26	0.44	-4.0	-0.66	942 X 930	3.13	4.85	-15.03	-0.0098

Figure 13: 回测结果

-0.5945	3.96	3.56	4.82	2.85	106	214801_pv_model_1_gen4_191114_219
-0.6307	7.01	5.97	3.4	5.07	169	212322_ld3_30
-0.6944	4.48	3.14	1.2	2.82	180	211930_h_ori151

Figure 14: 相关性结果

9 Alpha149

$$\begin{aligned} Alpha = & REGBETA(FILTER(CLOSE/DELAY(CLOSE, 1) - 1, BANCHMARKINDEXCLOSE < DELAY(BANCHMARK \\ & FILTER(BANCHMARKINDEXCLOSE/DELAY(BANCHMARKINDEXCLOSE, 1) - 1, BANCHMARKINDEX \\ & DELAY(BANCHMARKINDEXCLOSE, 1)), 252) \end{aligned} \tag{9}$$

10 Alpha150

$$Alpha = (CLOSE + HIGH + LOW)/3 * VOLUME \tag{10}$$

dates	long(M)	short(M)	pnl(M)	%ret	%tvr	shrp (IR)	%dd	%win	bpmrgn	fitness	Coverage	%posret	%inxret	%negret	IC
20100104-20101231	10.0	-10.0	-4.25	-21.98	46.54	-4.28(-0.271)	42.84	0.35	-18.89	-2.94	544 X 1217	-17.89	14.01	-26.07	-0.0272
20110101-20111231	10.0	-10.0	-2.52	-12.9	43.8	-3.3(-0.209)	32.71	0.39	-11.8	-1.79	599 X 1476	-51.87	-39.34	26.02	-0.0161
20120101-20121231	10.0	-10.0	-2.63	-13.5	42.96	-3.82(-0.242)	32.1	0.36	-12.58	-2.14	651 X 1659	-12.81	3.25	-14.21	-0.0176
20130101-20131231	10.0	-9.99	-4.0	-21.02	40.77	-4.5(-0.285)	40.56	0.4	-20.63	-3.23	652 X 1704	-5.52	19.03	-36.56	-0.0199
20140101-20141231	10.0	-9.95	-2.08	-10.61	47.06	-1.93(-0.122)	38.77	0.38	-9.03	-0.92	699 X 1612	34.21	35.54	-55.67	-0.0181
20150101-20151231	10.02	-9.79	-9.55	-49.94	40.88	-6.1(-0.386)	96.22	0.29	-48.35	-6.75	719 X 1587	-6.54	46.78	-93.3	-0.0355
20160101-20161231	10.0	-9.9	-5.6	-28.84	46.11	-6.16(-0.389)	57.67	0.34	-25.02	-4.87	807 X 1805	-52.69	-15.42	-4.75	-0.0318
20170101-20171231	10.0	-9.92	-1.05	-5.4	42.41	-0.92(-0.058)	16.33	0.48	-5.1	-0.33	847 X 2179	-25.24	0.88	14.58	-0.0089
20180101-20181231	10.0	-9.97	-4.07	-20.96	36.69	-3.97(-0.251)	47.63	0.35	-22.86	-3.0	895 X 2457	-67.62	-38.75	25.82	-0.0197
20190101-20191231	10.0	-9.96	-4.28	-21.97	36.71	-5.08(-0.321)	43.82	0.39	-23.94	-3.93	1012 X 2590	-6.95	26.71	-37.06	-0.0171
20200101-20200331	10.0	-9.96	-0.92	-19.83	33.0	-2.64(-0.167)	18.4	0.45	-24.02	-2.05	1027 X 2652	-42.27	-12.47	2.72	-0.0152
20100104-20200331	10.0	-9.95	-40.95	-20.69	42.18	-3.85(-0.244)	409.78	0.37	-19.56	-2.7	749 X 1848	-21.78	4.85	-19.46	-0.0211

Figure 15: 回测结果

-0.7611	5.4	4.91	-1.28	8.78	141	213518_h388
-0.7628	10.18	8.91	5.1	10.01	138	213652_h11024
-0.8561	4.52	4.94	2.48	7.69	180	211919_my_47

Figure 16: 相关性结果

11 总结

alpha131偏好t期vwap大于t-1期，同时量价相关性在近日越低越好（背离），即看多上涨缩量，看空下跌缩量的股票。从结果来看这类组合并不理想。

alpha133偏好过去20日最高价离当期越远越好，过去20最低价离当期越近越好（均值回归的思想）。