

# 国泰君安191因子回测-61-70

郑骋, 香港中文大学（深圳）, 金融工程硕士  
电话: 15825675534, 邮箱: zhengzc@zju.edu.cn

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# 1 Alpha61

$$\begin{aligned} Alpha = & (MAX(RANK(DECAYLINEAR(DELTA(VWAP, 1), 12)), \\ & RANK(DECAYLINEAR(RANK(CORR((LOW), MEAN(VOLUME, 80), 8)), 17))) * -1) \end{aligned} \quad (1)$$

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	2.68	13.82	25.2	4.17(0.264)	4.32	0.62	21.94	3.09	627 X 760	31.4	14.01	-3.77	0.0255
20110101-20111231	10.0	-10.0	2.02	10.37	23.48	4.2(0.265)	1.98	0.6	17.66	2.79	807 X 992	-22.86	-39.34	43.6	0.0205
20120101-20121231	10.0	-10.0	2.04	10.49	24.73	4.39(0.278)	2.84	0.65	16.96	2.86	983 X 1216	15.63	3.25	5.34	0.0229
20130101-20131231	10.01	-9.99	2.94	15.42	25.92	5.44(0.344)	2.14	0.65	23.8	4.2	1110 X 1325	43.44	19.03	-12.64	0.0251
20140101-20141231	10.02	-9.98	2.43	12.4	25.58	4.35(0.275)	4.25	0.67	19.4	3.03	1127 X 1347	50.87	35.54	-26.18	0.0225
20150101-20151231	10.04	-9.98	7.02	35.96	23.18	4.95(0.313)	12.6	0.66	62.04	6.16	1177 X 1426	114.24	46.78	-42.8	0.0385
20160101-20161231	10.01	-9.99	3.03	15.51	26.61	4.9(0.31)	4.03	0.69	23.31	3.74	1276 X 1523	7.73	-15.42	23.3	0.0286
20170101-20171231	10.0	-10.0	0.89	4.55	24.72	1.81(0.114)	3.47	0.55	7.37	0.78	1411 X 1680	-12.91	0.88	22.02	0.0132
20180101-20181231	9.99	-10.0	2.53	13.03	26.64	5.68(0.359)	2.43	0.65	19.56	3.97	1550 X 1901	-25.56	-38.75	51.58	0.0231
20190101-20191231	10.01	-9.99	2.76	14.15	26.67	6.58(0.416)	1.64	0.66	21.22	4.8	1631 X 1946	39.55	26.71	-11.3	0.0216
20200101-20200331	10.01	-9.99	0.11	2.35	25.64	0.59(0.037)	6.0	0.5	3.64	0.18	1673 X 1970	-11.7	-12.47	16.4	0.0053
20100104-20200331	10.01	-9.99	28.45	14.28	25.28	4.1(0.259)	12.64	0.64	22.61	3.08	1182 X 1425	23.34	4.85	5.22	0.0237

Figure 1: 回测结果

Corr	ISSharpe	SemiOS	OSSharpe	Fitness	OSdays	ID
0.7632	3.48	4.27	2.2	4.56	175	211919_my_11
0.7355	5.79	8.73	4.07	5.22	129	213824_v2_n_191006_1
0.7339	3.41	6.33	4.76	2.66	175	211919_my_94

Figure 2: 相关性结果

# 2 Alpha62

$$Alpha = (-1 * CORR(HIGH, RANK(VOLUME), 5)) \quad (2)$$

dates	long(M)	short(M)	pnl(M)	%ret	%tvr	shrp (IR)	%dd	%win	bpmrgn	fitness	Coverage	%posret	%inxret	%negret	IC
20100104-20101231	9.96	-9.96	2.5	209.81	75.87	1.09(0.069)	3.63	0.64	6.85	1.8	683 X 968	29.01	14.01	-3.02	0.0223
20110101-20111231	9.34	-9.34	2.68	1231.12	77.67	1.61(0.102)	1.15	0.68	7.57	6.42	771 X 1062	-10.98	-35.38	40.35	0.026
20120101-20121231	8.52	-8.52	2.04	347.92	81.03	0.99(0.063)	2.57	0.61	6.09	2.06	798 X 1106	34.5	13.76	-9.82	0.0229
20130101-20131231	9.49	-9.5	1.98	3740.46	76.78	1.85(0.117)	1.79	0.65	5.71	12.91	891 X 1323	36.84	20.19	-14.93	0.0122
20140101-20141231	8.98	-8.97	2.0	-6520.05	80.57	-0.98(-0.062)	1.09	0.62	5.65	-8.85	834 X 1212	53.23	40.27	-30.51	0.0178
20150101-20151231	8.33	-8.31	3.54	-88.87	78.28	-0.17(-0.011)	4.14	0.57	11.13	-0.18	779 X 1102	76.17	37.09	-32.7	0.0153
20160101-20161231	8.59	-8.57	2.59	599.49	77.59	1.38(0.087)	2.03	0.63	7.98	3.84	899 X 1305	8.45	-11.52	22.52	0.0217
20170101-20171231	8.06	-8.03	2.49	2387.19	81.24	2.02(0.127)	0.82	0.61	7.81	10.92	985 X 1431	1.67	3.65	30.11	0.019
20180101-20181231	9.46	-9.46	2.16	-731.85	76.67	-0.95(-0.06)	1.73	0.66	6.13	-2.93	1297 X 1861	-22.99	-39.66	46.47	0.0168
20190101-20191231	8.38	-8.4	1.74	532.78	80.09	1.95(0.123)	1.79	0.6	5.31	5.02	1216 X 1794	29.9	17.3	-8.57	0.0073
20200101-20200331	9.45	-9.48	-0.07	272.71	74.87	2.14(0.135)	3.63	0.38	-0.85	4.09	1419 X 2066	-19.47	-12.47	16.24	-0.0023
20100104-20200331	8.92	-8.92	23.66	162.14	78.4	0.07(0.005)	4.05	0.62	6.8	0.1	927 X 1334	22.07	5.53	4.58	0.0177

Figure 3: 回测结果

Corr	ISSharpe	SemiOS	OSSharpe	Fitness	OSdays	ID
0.7579	4.62	5.89	2.1	2.24	92	215072_fac252
0.7529	4.21	6.62	1.37	1.58	175	211930_h_ori67
0.7312	6.22	8.58	1.85	3.28	107	214560_fac123

Figure 4: 相关性结果

### 3 Alpha63

$$\text{Alpha} = \text{SMA}(\text{MAX}(\text{CLOSE} - \text{DELAY}(\text{CLOSE}, 1), 0), 6, 1) / \text{SMA}(\text{ABS}(\text{CLOSE} - \text{DELAY}(\text{CLOSE}, 1)), 6, 1) * 100 \quad (3)$$

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	-5.91	-30.57	52.94	-5.41(-0.342)	60.69	0.33	-23.09	-4.11	827 X 986	-26.48	14.01	-34.64	-0.0527
20110101-20111231	10.0	-10.0	-3.41	-17.46	49.22	-3.73(-0.236)	40.77	0.39	-14.19	-2.22	959 X 1186	-57.01	-39.34	22.1	-0.0365
20120101-20121231	9.98	-10.0	-4.37	-22.49	50.72	-5.39(-0.341)	45.78	0.35	-17.73	-3.59	1086 X 1286	-25.1	3.25	-19.86	-0.0453
20130101-20131231	9.96	-10.01	-4.59	-24.16	51.27	-5.71(-0.361)	46.29	0.34	-18.85	-3.92	1112 X 1335	-3.31	19.03	-44.92	-0.0401
20140101-20141231	9.91	-10.01	-4.04	-20.72	49.49	-5.11(-0.323)	46.21	0.33	-16.73	-3.31	1178 X 1334	15.01	35.54	-56.03	-0.0363
20150101-20151231	9.76	-10.03	-9.89	-51.36	43.54	-3.76(-0.238)	101.35	0.31	-47.06	-4.09	1245 X 1459	19.1	46.78	-119.66	-0.0544
20160101-20161231	9.75	-10.0	-4.6	-23.68	47.41	-4.19(-0.265)	57.57	0.33	-20.12	-2.96	1278 X 1587	-42.11	-15.42	-6.04	-0.0418
20170101-20171231	9.79	-9.99	-1.55	-8.03	46.04	-2.03(-0.129)	18.01	0.41	-6.97	-0.85	1510 X 1740	-32.59	0.88	16.04	-0.02
20180101-20181231	9.93	-9.97	-2.87	-14.84	48.08	-4.01(-0.254)	29.27	0.37	-12.36	-2.23	1667 X 1846	-71.74	-38.75	41.82	-0.0248
20190101-20191231	9.89	-10.0	-4.25	-21.89	52.96	-5.93(-0.375)	43.01	0.35	-16.55	-3.81	1648 X 1968	-11.23	26.71	-32.48	-0.0318
20200101-20200331	9.88	-10.01	-0.35	-7.73	51.37	-1.15(-0.072)	12.12	0.5	-5.92	-0.44	1628 X 2060	-24.3	-12.47	8.88	-0.0144
20100104-20200331	9.9	-10.0	-45.83	-23.15	49.22	-3.78(-0.239)	464.84	0.35	-18.81	-2.59	1260 X 1487	-23.63	4.85	-22.65	-0.0378

Figure 5: 回测结果

Corr	ISSharpe	SemiOS	OSSharpe	Fitness	OSdays	ID
0.6284	2.51	2.15	-0.71	1.1	92	215072_fac156
0.5409	2.95	3.81	0.53	1.11	92	215073_fac156
0.5151	3.62	3.8	0.84	1.65	100	214905_fac271

Figure 6: 相关性结果

### 4 Alpha64

$$\begin{aligned} \text{Alpha} = & (\text{MAX}(\text{RANK}(\text{DECAYLINEAR}(\text{CORR}(\text{RANK}(\text{VWAP}), \text{RANK}(\text{VOLUME}), 4), 4)), \\ & \text{RANK}(\text{DECAYLINEAR}(\text{TSMAX}(\text{CORR}(\text{RANK}(\text{CLOSE}), \text{RANK}(\text{MEAN}(\text{VOLUME}, 60)), 4), 13), 14))) * -1 \end{aligned} \quad (4)$$

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	1.15	5.94	23.31	3.35(0.212)	1.38	0.61	10.19	1.69	682 X 851	21.96	14.01	-10.09	0.0096
20110101-20111231	10.0	-10.0	1.39	7.14	22.97	4.63(0.293)	1.18	0.59	12.43	2.58	852 X 1064	-24.12	-39.34	38.4	0.0121
20120101-20121231	10.0	-10.0	1.68	8.63	23.29	5.41(0.342)	1.34	0.63	14.82	3.29	1006 X 1251	15.52	3.25	1.74	0.0152
20130101-20131231	10.0	-10.0	1.8	9.47	23.31	5.79(0.366)	0.9	0.62	16.24	3.69	1082 X 1356	36.92	19.03	-17.99	0.0152
20140101-20141231	10.0	-10.0	0.89	4.57	22.84	3.28(0.208)	1.28	0.58	8.0	1.47	1102 X 1377	44.5	35.54	-35.39	0.0074
20150101-20151231	10.0	-9.99	1.69	8.67	22.4	2.83(0.179)	5.81	0.57	15.49	1.76	1169 X 1454	85.02	46.78	-67.74	0.0091
20160101-20161231	10.0	-10.0	2.13	10.9	23.31	7.55(0.478)	0.99	0.7	18.71	5.16	1256 X 1557	4.66	-15.42	17.14	0.0186
20170101-20171231	10.0	-10.0	1.94	9.94	23.5	7.05(0.446)	0.83	0.64	16.92	4.58	1393 X 1724	-5.97	0.88	25.85	0.0182
20180101-20181231	10.0	-10.0	1.48	7.63	23.35	4.57(0.289)	1.28	0.58	13.06	2.61	1548 X 1917	-29.0	-38.75	44.24	0.0115
20190101-20191231	9.99	-10.0	1.57	8.02	24.47	4.85(0.307)	1.94	0.58	13.12	2.78	1596 X 1987	32.93	26.71	-16.87	0.012
20200101-20200331	9.99	-10.0	0.06	1.36	24.64	0.59(0.037)	2.59	0.55	2.2	0.14	1622 X 2027	-9.7	-12.47	12.4	0.0016
20100104-20200331	10.0	-10.0	15.79	7.93	23.31	4.41(0.279)	5.81	0.61	13.61	2.57	1180 X 1468	17.57	4.85	-1.71	0.0126

Figure 7: 回测结果

Corr	ISSharpe	SemiOS	OSSharpe	Fitness	OSdays	ID
0.7797	3.69	3.54	3.39	4.39	175	211919_my_167
0.7268	4.31	5.92	4.14	1.74	175	211930_h_ori42
0.711	5.95	6.85	3.57	5.6	146	213024_agen.ZSAlpha_46

Figure 8: 相关性结果

## 5 Alpha65

$$\text{Alpha} = \text{MEAN}(\text{CLOSE}, 6) / \text{CLOSE} \quad (5)$$

dates	long(M)	short(M)	pnl(M)	%ret	%tvr	shrp (IR)	%dd	%win	bpmrgn	fitness	Coverage	%posret	%inxret	%negret	IC
20100104-20101231	10.0	-9.98	7.93	41.02	75.42	7.63(0.483)	5.02	0.7	21.75	5.63	993 X 815	48.86	14.01	33.14	0.0643
20110101-20111231	9.99	-9.99	4.61	23.65	72.9	5.35(0.338)	7.33	0.66	12.98	3.05	1143 X 997	-16.82	-39.34	64.14	0.0432
20120101-20121231	10.0	-9.96	4.67	24.05	74.11	5.8(0.367)	3.75	0.7	12.98	3.31	1268 X 1102	21.27	3.25	26.83	0.0433
20130101-20131231	10.0	-9.93	6.67	35.12	74.87	7.84(0.496)	2.83	0.68	18.77	5.37	1360 X 1086	57.09	19.03	13.01	0.051
20140101-20141231	10.01	-9.78	6.36	32.79	74.82	7.56(0.478)	2.68	0.71	17.52	5.01	1402 X 1109	67.44	35.54	-2.67	0.0478
20150101-20151231	10.0	-9.54	8.92	47.21	69.78	3.24(0.205)	32.74	0.65	26.8	2.66	1518 X 1186	111.9	46.78	-21.47	0.0458
20160101-20161231	9.99	-9.39	4.58	24.08	73.45	3.96(0.25)	11.69	0.7	13.17	2.26	1633 X 1232	1.46	-15.42	48.37	0.0404
20170101-20171231	9.98	-9.44	2.21	11.65	73.03	2.29(0.145)	6.13	0.64	6.39	0.92	1762 X 1487	-21.18	0.88	46.35	0.0237
20180101-20181231	9.86	-9.87	5.62	29.28	74.68	6.12(0.387)	3.32	0.62	15.69	3.83	1814 X 1699	-34.09	-38.75	92.59	0.0421
20190101-20191231	9.97	-9.84	5.38	27.8	75.02	6.28(0.397)	3.1	0.68	14.85	3.82	1977 X 1639	19.03	26.71	36.79	0.0352
20200101-20200331	9.99	-9.85	0.22	4.85	70.38	0.64(0.04)	8.89	0.57	2.74	0.17	2077 X 1611	-25.29	-12.47	35.37	0.0103
20100104-20200331	9.98	-9.77	57.16	29.07	73.73	4.43(0.28)	32.79	0.67	15.77	2.78	1501 X 1245	24.36	4.85	33.87	0.0429

Figure 9: 回测结果

Corr	ISSharpe	SemiOS	OSSharpe	Fitness	OSdays	ID
0.9064	3.41	6.33	4.76	2.66	175	211919_my_94
0.7942	7.62	8.79	5.29	5.52	100	214928_pv_model_8_mod_gen4_191114_89
0.7936	3.3	5.35	1.37	1.6	101	214795_pv_model_1_gen6_191114_229

Figure 10: 相关性结果

## 6 Alpha66

$$\text{Alpha} = (\text{CLOSE} - \text{MEAN}(\text{CLOSE}, 6)) / \text{MEAN}(\text{CLOSE}, 6) * 100 \quad (6)$$

dates	long(M)	short(M)	pnl(M)	%ret	%tvr	shrp (IR)	%dd	%win	bpmrgn	fitness	Coverage	%posret	%inxret	%negret	IC
20100104-20101231	9.97	-10.0	-7.96	-41.18	75.48	-7.56(-0.478)	80.57	0.31	-21.82	-5.59	794 X 1015	-33.92	14.01	-48.41	-0.0635
20110101-20111231	9.99	-9.99	-4.65	-23.84	72.96	-5.34(-0.338)	53.44	0.34	-13.07	-3.05	972 X 1168	-64.56	-39.34	16.85	-0.0428
20120101-20121231	9.95	-10.0	-4.77	-24.58	74.22	-5.85(-0.37)	50.35	0.32	-13.24	-3.37	1073 X 1297	-27.84	3.25	-21.33	-0.0435
20130101-20131231	9.92	-10.01	-6.72	-35.41	74.86	-7.73(-0.489)	67.75	0.33	-18.93	-5.31	1052 X 1395	-14.04	19.03	-56.62	-0.0505
20140101-20141231	9.75	-10.01	-6.4	-33.06	74.8	-7.47(-0.472)	66.71	0.29	-17.67	-4.97	1073 X 1438	1.99	35.54	-67.16	-0.047
20150101-20151231	9.47	-10.01	-9.11	-48.49	69.76	-3.32(-0.21)	96.43	0.35	-27.47	-2.77	1134 X 1570	19.75	46.78	-111.94	-0.0458
20160101-20161231	9.27	-9.99	-4.75	-25.11	73.34	-4.06(-0.256)	64.33	0.31	-13.78	-2.37	1183 X 1682	-50.24	-15.42	-2.12	-0.0413
20170101-20171231	9.33	-9.98	-2.49	-13.2	72.99	-2.55(-0.161)	28.68	0.35	-7.24	-1.09	1431 X 1817	-48.31	0.88	19.58	-0.0253
20180101-20181231	9.85	-9.89	-6.27	-32.67	74.9	-6.71(-0.424)	64.02	0.35	-17.46	-4.43	1638 X 1874	-98.09	-38.75	32.44	-0.0464
20190101-20191231	9.81	-9.98	-6.2	-32.04	75.15	-6.94(-0.439)	63.22	0.32	-17.09	-4.53	1579 X 2037	-42.96	26.71	-21.44	-0.0398
20200101-20200331	9.83	-10.0	-0.37	-8.04	70.46	-1.01(-0.064)	13.13	0.41	-4.54	-0.34	1543 X 2145	-39.48	-12.47	22.95	-0.0135
20100104-20200331	9.73	-9.99	-59.69	-30.41	73.77	-4.58(-0.29)	615.08	0.33	-16.48	-2.94	1202 X 1544	-36.04	4.85	-24.91	-0.0438

Figure 11: 回测结果

Corr	ISSharpe	SemiOS	OSSharpe	Fitness	OSdays	ID
0.5858	2.95	3.81	0.53	1.11	92	215073_fac156
0.5526	3.62	3.8	0.84	1.65	100	214905_fac271
0.5518	2.51	2.15	-0.71	1.1	92	215072_fac156

Figure 12: 相关性结果

## 7 Alpha67

$$Alpha = SMA(MAX(CLOSE - DELAY(CLOSE, 1), 0), 24, 1) / SMA(ABS(CLOSE - DELAY(CLOSE, 1)), 24, 1) * 100 \quad (7)$$

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	-3.47	-17.92	30.37	-3.1(-0.196)	37.79	0.4	-23.6	-2.38	833 X 981	-10.82	14.01	-25.0	-0.0284
20110101-20111231	10.0	-10.0	-1.9	-9.73	27.23	-1.85(-0.117)	25.14	0.43	-14.29	-1.11	980 X 1165	-47.7	-39.34	28.24	-0.0217
20120101-20121231	9.98	-10.01	-4.57	-23.54	28.13	-5.57(-0.352)	46.01	0.35	-33.45	-5.1	1078 X 1295	-24.55	3.25	-22.51	-0.0441
20130101-20131231	9.95	-10.01	-3.4	-17.88	29.45	-3.64(-0.23)	35.51	0.43	-24.28	-2.83	1073 X 1374	5.49	19.03	-41.1	-0.0265
20140101-20141231	9.83	-10.02	-2.86	-14.71	28.73	-3.5(-0.221)	38.4	0.36	-20.46	-2.5	1141 X 1370	21.46	35.54	-50.18	-0.024
20150101-20151231	9.61	-10.01	-9.63	-50.69	25.72	-3.41(-0.215)	100.42	0.34	-78.21	-4.78	1148 X 1556	18.26	46.78	-116.11	-0.0503
20160101-20161231	9.55	-9.99	-5.37	-27.94	26.37	-5.39(-0.341)	62.2	0.31	-42.7	-5.55	1237 X 1628	-48.89	-15.42	-8.31	-0.0424
20170101-20171231	9.64	-9.99	-1.61	-8.41	23.91	-1.98(-0.125)	17.89	0.39	-14.08	-1.17	1458 X 1791	-32.61	0.88	14.93	-0.0175
20180101-20181231	9.89	-9.94	-3.38	-17.49	25.52	-4.19(-0.265)	35.63	0.34	-27.46	-3.47	1701 X 1812	-73.13	-38.75	37.79	-0.0274
20190101-20191231	9.82	-9.99	-4.63	-23.91	29.79	-6.03(-0.381)	47.28	0.35	-32.18	-5.4	1604 X 2013	-14.11	26.71	-33.65	-0.0323
20200101-20200331	9.82	-10.01	-0.6	-13.16	29.79	-1.82(-0.115)	15.63	0.4	-17.49	-1.21	1605 X 2083	-34.05	-12.47	7.6	-0.0192
20100104-20200331	9.82	-10.0	-41.41	-21.04	27.58	-3.22(-0.203)	422.83	0.37	-30.43	-2.81	1235 X 1513	-21.02	4.85	-20.95	-0.0312

Figure 13: 回测结果

Corr	ISSharpe	SemiOS	OSSharpe	Fitness	OSdays	ID
0.5399	2.51	2.15	-0.71	1.1	92	215072_fac156
0.5359	3.65	1.18	0.64	1.4	162	212376_t20_h35
0.4921	3.13	2.66	2.51	1.56	85	215417_fac53

Figure 14: 相关性结果

## 8 Alpha68

$$Alpha = SMA(((HIGH + LOW)/2 - (DELAY(HIGH, 1) + DELAY(LOW, 1))/2) * (HIGH - LOW)/VOLUME, 15, 2) \quad (8)$$

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	-1.74	-9.0	30.14	-1.12(-0.071)	29.84	0.55	-11.94	-0.61	971 X 843	3.61	14.01	-21.61	-0.0007
20110101-20111231	10.0	-10.0	-0.44	-2.27	17.76	-0.36(-0.023)	15.55	0.53	-5.12	-0.13	973 X 1172	-44.94	-39.34	40.39	-0.0004
20120101-20121231	10.0	-10.0	-1.19	-6.15	20.01	-0.91(-0.058)	22.91	0.47	-12.25	-0.51	1144 X 1228	2.23	3.25	-14.48	-0.0007
20130101-20131231	10.0	-10.0	-1.45	-7.6	28.06	-0.99(-0.063)	22.2	0.42	-10.84	-0.51	1216 X 1230	1.99	19.03	-17.2	-0.0011
20140101-20141231	10.0	-10.14	-4.03	-16.77	31.38	-1.55(-0.098)	50.74	0.48	-26.01	-1.14	1170 X 1342	17.99	35.54	-58.26	-0.0025
20150101-20151231	10.0	-9.98	3.23	17.49	19.42	0.86(0.054)	58.83	0.5	34.11	0.82	1415 X 1289	100.35	46.78	-67.41	0.0011
20160101-20161231	9.97	-10.0	-0.7	-3.55	17.58	-0.41(-0.026)	27.37	0.6	-8.13	-0.19	997 X 1868	-25.96	-15.42	18.75	-0.0005
20170101-20171231	9.96	-9.98	-0.27	-1.46	19.93	-0.17(-0.011)	30.14	0.55	-2.73	-0.05	1199 X 2051	-18.34	0.88	15.59	-0.0003
20180101-20181231	10.0	-10.0	-0.4	-1.75	19.31	-0.17(-0.011)	29.7	0.54	-4.22	-0.05	1423 X 2090	-46.44	-38.75	42.35	-0.0008
20190101-20191231	9.98	-10.0	3.75	19.71	24.38	1.48(0.093)	17.65	0.5	31.52	1.33	1685 X 1932	41.67	26.71	-3.19	0.0022
20200101-20200331	9.82	-10.07	0.49	11.3	31.69	0.65(0.041)	16.52	0.57	13.46	0.39	1697 X 1992	-16.83	-12.47	37.49	0.0011
20100104-20200331	9.99	-10.01	-2.74	-0.83	23.0	-0.07(-0.005)	100.62	0.52	-2.39	-0.01	1231 X 1517	2.8	4.85	-5.54	-0.0004

Figure 15: 回测结果

Corr	ISSharpe	SemiOS	OSSharpe	Fitness	OSdays	ID
0.1333	6.03	6.08	6.45	3.98	133	213653_h22132
0.1224	3.01	4.92	nan	2.27	nan	217539_yf2
0.1205	3.05	4.27	nan	1.47	nan	215045_v1

Figure 16: 相关性结果

## 9 Alpha69

$$\begin{aligned} \text{Alpha} = & (\text{SUM}(\text{DTM}, 20) > \text{SUM}(\text{DBM}, 20)) ? (\text{SUM}(\text{DTM}, 20) - \text{SUM}(\text{DBM}, 20)) / \text{SUM}(\text{DTM}, 20) : \\ & (\text{SUM}(\text{DTM}, 20) = \text{SUM}(\text{DBM}, 20)) ? 0 : (\text{SUM}(\text{DTM}, 20) - \text{SUM}(\text{DBM}, 20)) / \text{SUM}(\text{DBM}, 20) \end{aligned} \quad (9)$$

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	-1.61	-8.33	29.42	-1.9(-0.12)	20.32	0.45	-11.32	-1.01	969 X 799	5.21	14.01	-21.87	-0.0137
20110101-20111231	10.0	-10.0	-1.28	-6.54	26.94	-1.97(-0.125)	14.07	0.48	-9.72	-0.97	1102 X 991	-41.26	-39.34	28.17	-0.0127
20120101-20121231	10.0	-10.0	-1.73	-8.92	27.17	-3.2(-0.202)	17.54	0.42	-13.14	-1.83	1264 X 1067	-4.57	3.25	-13.27	-0.0177
20130101-20131231	10.0	-10.0	-1.46	-7.66	28.95	-2.26(-0.143)	15.8	0.45	-10.58	-1.16	1344 X 1049	18.22	19.03	-33.53	-0.011
20140101-20141231	10.0	-10.0	-0.06	-0.3	28.5	-0.09(-0.006)	10.89	0.46	-0.42	-0.01	1363 X 1012	35.4	35.54	-35.98	-0.0029
20150101-20151231	9.99	-10.01	-5.0	-25.66	30.21	-3.8(-0.24)	52.11	0.44	-33.93	-3.5	1360 X 1071	48.74	46.78	-99.91	-0.0213
20160101-20161231	10.0	-10.01	-2.44	-12.49	27.48	-3.96(-0.25)	25.19	0.39	-18.18	-2.67	1489 X 1207	-22.24	-15.42	-2.76	-0.0179
20170101-20171231	10.0	-10.0	-0.92	-4.7	25.8	-1.63(-0.103)	10.4	0.46	-7.29	-0.7	1670 X 1406	-22.77	0.88	13.36	-0.0106
20180101-20181231	9.99	-10.0	-2.43	-12.49	26.33	-4.61(-0.292)	24.3	0.38	-18.98	-3.18	1832 X 1557	-53.85	-38.75	28.82	-0.0206
20190101-20191231	9.99	-10.0	-3.4	-17.44	27.83	-7.21(-0.456)	34.07	0.3	-25.07	-5.7	1995 X 1609	6.9	26.71	-41.74	-0.0256
20200101-20200331	9.99	-10.0	-0.01	-0.23	28.38	-0.06(-0.004)	3.7	0.5	-0.33	-0.01	2109 X 1570	-14.79	-12.47	14.29	-0.0041
20100104-20200331	10.0	-10.0	-20.34	-10.22	27.87	-2.74(-0.173)	206.64	0.43	-14.66	-1.66	1455 X 1186	-3.32	4.85	-17.11	-0.0151

Figure 17: 回测结果

Corr	ISSharpe	SemiOS	OSSharpe	Fitness	OSdays	ID
0.5858	2.51	2.15	-1.01	1.1	97	215072_fac156
0.5743	3.13	2.66	1.97	1.56	90	215417_fac53
0.5442	2.4	1.92	-0.48	1.19	90	215415_fac85

Figure 18: 相关性结果

## 10 Alpha70

$$\text{Alpha} = \text{STD}(\text{AMOUNT}, 6) \quad (10)$$

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	-3.65	-18.86	27.78	-3.87(-0.245)	37.42	0.36	-27.15	-3.19	552 X 1257	-10.05	14.01	-27.67	-0.0221
20110101-20111231	10.0	-10.0	-2.75	-14.07	25.16	-3.86(-0.244)	34.51	0.39	-22.42	-2.88	621 X 1519	-51.98	-39.34	23.76	-0.0167
20120101-20121231	10.0	-10.0	-2.95	-15.16	24.58	-4.64(-0.293)	33.11	0.38	-24.67	-3.64	673 X 1697	-14.21	3.25	-16.11	-0.0191
20130101-20131231	10.0	-10.0	-4.38	-23.01	24.34	-5.26(-0.333)	44.29	0.38	-37.82	-5.12	690 X 1756	-6.88	19.03	-39.14	-0.0221
20140101-20141231	10.0	-10.0	-2.91	-14.86	26.67	-3.21(-0.203)	42.99	0.34	-22.29	-2.4	753 X 1758	29.55	35.54	-59.29	-0.0193
20150101-20151231	10.0	-9.97	-9.3	-47.84	26.43	-6.1(-0.386)	93.73	0.35	-72.26	-8.21	823 X 1881	-6.18	46.78	-89.43	-0.0283
20160101-20161231	10.0	-9.95	-6.19	-31.8	27.32	-6.43(-0.406)	61.88	0.3	-46.54	-6.93	877 X 1988	-56.52	-15.42	-6.92	-0.0312
20170101-20171231	9.99	-9.96	-2.49	-12.79	24.89	-2.53(-0.16)	25.62	0.46	-20.57	-1.81	909 X 2340	-37.38	0.88	11.88	-0.0147
20180101-20181231	9.99	-10.0	-4.86	-25.01	23.13	-5.35(-0.338)	53.43	0.33	-43.25	-5.56	935 X 2578	-75.42	-38.75	25.37	-0.0223
20190101-20191231	9.99	-9.99	-4.52	-23.18	24.19	-5.83(-0.369)	45.23	0.37	-38.31	-5.7	1009 X 2608	-6.97	26.71	-39.35	-0.0188
20200101-20200331	9.98	-9.99	-1.27	-27.42	23.48	-4.14(-0.262)	19.53	0.36	-46.65	-4.48	1029 X 2659	-55.64	-12.47	0.84	-0.0214
20100104-20200331	10.0	-9.99	-45.27	-22.77	25.41	-4.59(-0.29)	453.34	0.36	-35.83	-4.34	790 X 1955	-24.36	4.85	-21.15	-0.0215

Figure 19: 回测结果

Corr	ISSharpe	SemiOS	OSSharpe	Fitness	OSdays	ID
0.6112	3.32	1.93	1.97	1.91	164	212322_ld3_22
0.6081	2.52	1.44	-1.14	1.33	97	215072_fac239
0.5705	3.09	1.59	-1.49	1.52	97	215074_fac239

Figure 20: 相关性结果



## 11 close

$$\text{Alpha} = \text{STD}(\text{CLOSE}, 6) \quad (11)$$

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	-2.82	-14.56	19.11	-2.2(-0.139)	29.67	0.38	-30.47	-1.92	533 X 1276	-5.11	14.01	-23.99	-0.0042
20110101-20111231	10.0	-10.0	-0.7	-3.58	18.47	-0.69(-0.043)	13.04	0.46	-7.75	-0.3	629 X 1511	-42.57	-39.34	35.4	-0.0008
20120101-20121231	10.0	-10.0	-0.25	-1.27	17.67	-0.24(-0.015)	17.55	0.42	-2.86	-0.07	653 X 1717	4.82	3.25	-7.34	-0.0012
20130101-20131231	9.98	-10.01	-1.02	-5.3	19.83	-0.92(-0.058)	11.8	0.43	-10.77	-0.47	623 X 1823	16.86	19.03	-27.47	-0.002
20140101-20141231	9.83	-10.01	-3.4	-17.49	22.33	-2.67(-0.169)	38.74	0.37	-31.29	-2.36	804 X 1707	6.18	35.54	-40.7	-0.0037
20150101-20151231	9.93	-10.01	-0.73	-4.1	18.45	-0.3(-0.019)	47.47	0.45	-8.15	-0.14	863 X 1841	73.58	46.78	-80.48	0.0004
20160101-20161231	9.93	-9.99	-2.99	-15.36	19.79	-2.22(-0.141)	42.91	0.35	-31.03	-1.96	854 X 2011	-44.9	-15.42	14.02	-0.0031
20170101-20171231	9.96	-10.0	-2.31	-11.95	22.43	-1.88(-0.119)	26.43	0.36	-21.16	-1.37	852 X 2396	-41.27	0.88	17.42	-0.0034
20180101-20181231	9.94	-10.01	-2.55	-13.15	21.94	-2.25(-0.143)	32.75	0.45	-23.99	-1.74	857 X 2656	-60.61	-38.75	33.93	-0.0026
20190101-20191231	9.96	-10.0	-2.38	-12.1	22.04	-1.69(-0.107)	32.01	0.4	-22.13	-1.25	881 X 2736	6.92	26.71	-31.22	-0.0028
20200101-20200331	9.93	-10.0	-0.91	-19.28	21.61	-2.91(-0.184)	12.17	0.41	-36.23	-2.75	890 X 2798	-46.55	-12.47	7.21	-0.0055
20100104-20200331	9.95	-10.0	-20.03	-10.12	20.24	-1.38(-0.087)	205.38	0.41	-19.93	-0.98	759 X 1987	-9.56	4.85	-10.61	-0.0024

Figure 21: 回测结果

+	+	+	+	+	+	+	+
Corr	ISSharpe	SemiOS	OSSharpe	Fitness	OSdays	ID	
+	+	+	+	+	+	+	+
0.1569	3.74	8.18	5.82	1.96	100	214818_pv_model_2_gen2_191114_69	
0.1384	2.52	5.56	0.78	1.05	100	214833_pv_model_4_gen6_191114_46	

Figure 22: 相关性结果

## 12 volume

$$\text{Alpha} = \text{STD}(\text{VOLUME}, 6) \quad (12)$$

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	-4.36	-22.51	29.15	-3.77(-0.238)	45.28	0.32	-30.87	-3.31	458 X 1174	-21.85	14.01	-23.15	-0.0174
20110101-20111231	10.0	-10.0	-1.4	-7.16	26.43	-1.71(-0.108)	24.65	0.46	-10.84	-0.89	512 X 1419	-42.47	-39.34	28.14	-0.0062
20120101-20121231	10.0	-10.0	-2.52	-12.96	25.16	-3.4(-0.215)	29.98	0.36	-20.6	-2.44	583 X 1623	-13.47	3.25	-12.44	-0.015
20130101-20131231	10.0	-10.0	-4.6	-24.15	24.23	-5.14(-0.325)	46.44	0.3	-39.9	-5.13	626 X 1701	-10.93	19.03	-37.39	-0.0196
20140101-20141231	10.0	-10.0	0.6	3.06	25.7	0.55(0.035)	20.36	0.43	4.74	0.19	663 X 1609	59.2	35.54	-53.11	-0.0032
20150101-20151231	10.0	-9.97	-4.96	-25.55	24.21	-3.19(-0.202)	51.68	0.34	-42.07	-3.28	671 X 1570	11.72	46.78	-62.75	-0.0144
20160101-20161231	10.0	-9.95	-2.91	-14.91	25.86	-4.07(-0.257)	34.64	0.36	-23.08	-3.09	750 X 1821	-32.57	-15.42	2.81	-0.0134
20170101-20171231	10.0	-9.96	-1.4	-7.19	24.63	-1.57(-0.099)	19.65	0.42	-11.71	-0.85	825 X 2168	-24.92	0.88	10.56	-0.0076
20180101-20181231	9.99	-9.99	-5.02	-25.82	24.09	-6.9(-0.436)	53.67	0.3	-42.89	-7.14	892 X 2435	-79.47	-38.75	27.79	-0.0171
20190101-20191231	9.98	-9.99	-5.47	-28.08	24.62	-7.2(-0.455)	55.81	0.31	-45.6	-7.69	970 X 2620	-22.52	26.71	-33.6	-0.0191
20200101-20200331	9.98	-9.99	-1.33	-28.71	24.17	-5.85(-0.37)	15.04	0.33	-47.55	-6.37	993 X 2680	-70.63	-12.47	13.12	-0.0216
20100104-20200331	10.0	-9.99	-33.36	-16.78	25.38	-3.34(-0.211)	333.8	0.36	-26.43	-2.72	702 X 1835	-18.91	4.85	-14.63	-0.0135

Figure 23: 回测结果

+	+	+	+	+	+	+	+
Corr	ISSharpe	SemiOS	OSSharpe	Fitness	OSdays	ID	
+	+	+	+	+	+	+	+
0.3433	2.2	1.01	-2.14	3.45	52	213716_Lessgerladminexp2mv	
0.3359	3.09	1.59	-1.49	1.52	97	215074_fac239	
0.3356	2.58	1.6	1.77	1.46	90	215415_fac16	

Figure 24: 相关性结果

## 13 总结

alpha70为amount的波动率，其实质上表征了量价是趋同还是背离的关系。