STAT8020 Quantitative Strategies and Algorithmic Trading

(lectures = overview, tutorials = specific calc.)

Lecture 2 – 20210128 (part 2)

Profit calculation when holding futures beyond expiration date *look back eg continues !*

	HOLDING	DATE	INDEX	SPOT	NEXT MONTH
		20170324	24358.27	24381	24392
	*	20170327	24193.70	24255	24259
	*	20170328	24345.87	24355	24373
	*	20170329	24392.05	24393	24427
	*	20170330	24301.09	24298	24313
	*	20170331	24111.59	24131	24023
	*	20170403	24261.48	24243	24138
		20170405	24400.80	24400	24297

Buy March contract at day close of 20170324 (=24381),
Sell March contract at day close of 20170329 (=24393),
Buy April contract at day close of 20170329 (=24427)
Sell April contract at day close of 20170403 (=24243)
Profit=24393-24381+24243-24427=-172

How a hedge fund exploits the time series momentum ?

- T.J.Moskowitz,Y.H.Ooi & L.H.Pedersen(2012), "Time series momentum". Journal of Financial Economics,
  104(2), 228-250.
- Moskowitz: Professor in University of Chicago Booth School of Business, awarded Fisher Black Prize in 2007 (to distinguished researchers under 40)
- Ooi: Vice-chairman of AQR Capital Management, awarded by Morningstar the alternatives fund manager of the year award

---

Trading strategy to exploit short term momentum

- (1) Trade futures instead of stocks
- (2) Reduce trading frequency by making only monthly review
- (3) Use the same strategy on four types of market: commodities futures, forex futures index futures and bond futures (diversification)
- (4) In each market, include many futures products commodities (25), forex (12), stock indices (13) and bond (9)
- (5) In each market, choose a right look-back period to predict the future one-month performance

Look-back period vs holding period

t-statistic of abnormal returns in index futures
*t-statistic >1.96

Look-back period (Month)	Holding period (Month)							
	1	3	6	9	12	24	36	48
1	1.05	2.36*	2.89*	3.08*	3.242*	2.28*	1.93	1.28
3	1.48	2.23*	2.21*	2.81*	2.78*	2*	1.57	1.14
6	3.5*	3.18*	3.49*	3.52*	3.03*	2.08*	1.36	0.88
9	4.21*	3.94*	3.79*	3.3*	2.64*	1.96*	1.21	0.75
12	3.77*	3.55*	3.03*	2.58*	2.02*	1.57	0.78	0.33
24	2.04*	2.22*	1.96*	1.7	1.49	0.87	0.43	0.13
36	1.86	1.66	1.26	0.9	0.66	0.34	0.02	0.08
48	0.81	0.84	0.58	0.44	0.36	0.12	0.01	0.23

5

The performance of their diversified strategy
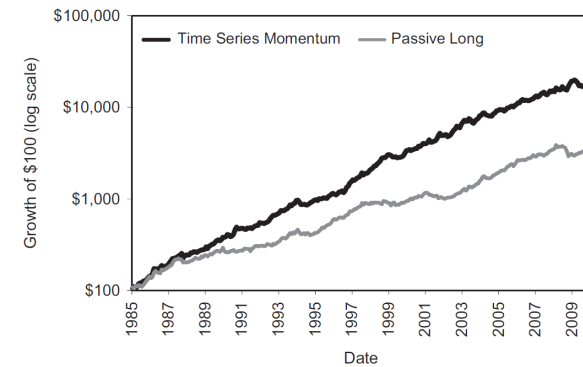
6

TTR based on seasonal patterns

Halloween is a seas. pattern TTR

other misc TT strategies : Halloween and PEAD

- Market anomalies against market efficiency started to accumulate in the1980's. January effect in the US market is an example
- In Hong Kong : 五窮 (t=1.05)、六絕(t=0.28)、七翻身 (t=2.53)
- K. Lam and P. Yu (2013) "計出你的投資勝算", 234 pages. 天窗出版社
- S. Bouman and B. Jacobsen: "The Halloween Indicator, 'Sell in May and Go Away' Another puzzle ", The American Economic Review Vol. 92, Dec 2002
- The Halloween strategy: Hold stocks from Nov 1-April 30, hold T-bills from May 1-Oct 30.

7

Literature on Halloween effect

- Jacobsen, B. and Visaltanachoti, N. (2009), The Halloween Effect in U.S. Sectors. The Financial Review, 44: P.437–459.
- Andrade, S.C, Chhaochharia, V. and Fuerst, M.E. " 'Sell in May and go Away' just Won't Go Away", July 2012.
- 林建 (2012) " 被港人忽略的「萬聖節策略」", 信報「數裏見真章」專欄, 20120705, 20121101
- Lean, H.H. "The Halloween Puzzle in Selected Asian Stock Markets", Int. Journal of Economics and Management, 5(1),216-225(2011).
- Zhang, C.Y. and Jacobsen, B." Are Monthly Seasonals Real? A Three Century Perspective" (Review of Finance)

8

Halloween performance 1973-1996

表1: 此表節錄自 Bouman 和 Jacobsen 的文章。表內列出「買入並持有策略」及「萬聖節策略」於17個股市的平均年回報率及風險(1973年至1996年)。回報率由 MSCI Reinvestment Indices 算出。表內紅色的回報率為較大的回報率。

red % means large returns, NOT stat sig !!

it seems Halloween>BAH (more red %)

	1973 年至 1996 年			
	買入並持有策略		萬聖節策略	
地區	年平均回報率	標準差	年平均回報率	標準差
澳洲	12.12%	25.15%	13.90%	14.52%
奧地利	8.62%	26.39%	11.69%	17.11%
比利時	10.62%	19.39%	16.00%	11.61%
加拿大	10.22%	14.36%	12.48%	11.20%
丹麥	12.15%	27.15%	12.55%	12.05%
法國	13.35%	26.90%	17.81%	16.13%
德國	8.99%	21.69%	10.84%	12.33%
香港	15.06%	41.92%	12.81%	30.85%
愛爾蘭	15.12%	34.68%	18.31%	21.41%
意大利	13.05%	28.44%	19.72%	16.45%
日本	7.14%	19.90%	9.46%	16.39%
荷蘭	12.73%	18.66%	15.15%	11.24%
新加坡	7.62%	34.99%	12.74%	31.75%
南非	18.80%	22.96%	15.14%	15.97%
瑞士	7.51%	22.06%	8.09%	14.18%
英國	14.86%	28.18%	18.84%	21.48%
美國	11.37%	16.40%	11.61%	11.38%

信報

9

Halloween performance 1996-2012

表2: 此表由筆者提供。此表列出「買入並持有策略」及「萬聖節策略」於27個股市的平均年回報率及風險(1996年至2012年)。回報率以美元計算,由當地最具代表性的指數算出。表內紅色的回報率為較大的回報率。

it seems Halloween>BAH (more red %)

	1996 至 2012 年			
	買入並持有策略		萬聖節策略	
指數	年平均回報率	標準差	年平均回報率	標準差
標普 500	6.81%	20.14%	8.03%	10.67%
納斯達克	9.81%	28.23%	8.78%	18.62%
恒生	6.86%	23.53%	6.34%	12.59%
上證綜合	18.74%	54.88%	16.69%	34.40%
日經平均	-0.02%	28.33%	2.91%	11.99%
新加坡海峽時報	10.26%	32.82%	8.49%	15.38%
澳洲普通股	9.13%	25.36%	9.44%	10.20%
南韓綜合	11.17%	44.83%	16.47%	35.04%
台灣加權	5.00%	29.42%	14.51%	16.84%
印度孟買	14.19%	43.43%	11.07%	16.52%
印尼雅加達綜合	16.22%	48.79%	16.62%	33.63%
馬來西亞吉隆坡綜合	9.01%	32.33%	16.18%	25.17%
英國 FTSE100	5.77%	22.89%	6.44%	10.60%
法國 CAC	6.12%	25.44%	9.40%	13.08%
德國 DAX	10.36%	27.99%	12.30%	12.32%
加拿大標普綜合	10.87%	25.79%	10.01%	12.80%
西班牙 IBEX 35	7.45%	28.28%	8.94%	18.01%
奧地利交易 ATX	10.56%	34.74%	13.87%	16.29%
比利時 BEL 20	3.61%	29.69%	5.85%	12.68%
荷蘭 AEX	5.63%	27.81%	8.42%	12.15%
挪威 OSE 全股	16.20%	35.68%	14.16%	13.75%
瑞士 SMI	7.69%	22.88%	7.17%	11.36%
阿根廷 Merval	8.79%	42.93%	11.34%	26.83%
巴西 Bovespa	20.51%	45.59%	23.88%	20.60%
墨西哥 IPC	16.98%	29.93%	18.11%	14.05%
俄羅斯交易系統現金	40.64%	79.44%	34.78%	44.23%
南非約翰尼斯堡全股	10.90%	29.98%	13.54%	13.17%

信報

10

Price drift after certain events

- Post-earnings announcement drift (PEAD) --- enter at market open after the earning announcement was made after the previous close: buying the stock if return is very positive, and shorting if the return is very negative, liquidate the position at market close
- Performance of PEAD are shown in p.161 in "Algorithmic Trading" by E.P.Chan *basically another ST momentum strategy*
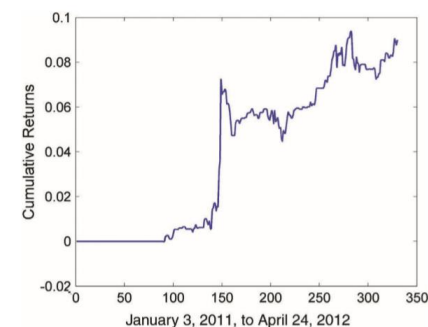
11

Equity curve for PEAD strategy

January 3, 2011, to April 24, 2012

FIGURE 7.2 Cumulative Returns Curve of PEAD Strategy