

Do informed option investors
predict stock return? Evidence from
TWSE

Outline

- Introduction
- Data
- Empirical specification
- Result
- Conclusion

Introduction

- Growing body of literature examine the magnitude of the impact of foreign investor trading on host-country returns
- This study represents the first of its kind to investigate the relationship between foreign investments flow and host-country returns on option market
- In complete market, option trading should convey no additional information.

Introduction

- Barber et al.(2006) use TWSE transection data to demonstrate that individual investors were the main losers, foreign institutional invesotrs were the main winners.
- Use option trades initiated by buyers to open new positions as information variable.
- Investigate whether informed traders will choose OTM option,short-horizon option(for high leverage)

Data

- The options transactions records providing:
 1. Identification of investors
 2. Strike price , Time to Expiration
 3. Trading direction (B/S)
- Data period covers 2001/12/21 ~ 2005/12/24

Data

- Open Buy Call is the highest
- Individuals Investors are the main participants
- 不算造市商 Indi In : Insti In = 3:1

Trading volume (contracts)	Open				Close			
	Buy		Sell		Buy		Sell	
	Put	Call	Put	Call	Put	Call	Put	Call
Average (no.)	9424	11,981	7827	10,277	7000	9406	8450	10,885
Domestic institutional investors (%)	6.04	3.19	8.52	8.69	8.93	8.78	5.67	3.37
Foreign institutional investors (%)	8.39	3.85	1.85	2.88	1.49	1.95	4.55	2.67
Individual investors (%)	50.10	67.72	48.82	39.42	43.96	35.79	49.88	66.15
Market makers (%)	35.47	25.23	40.82	49.01	45.62	53.47	39.91	27.80

Data

- Open buy Volume is the key variable in our examination of the information content of trading volume
- Open-buy volume are calculated by summing all available put and call
- Then examine whether these four types investors tend to open-buy position, and if so ,which type of option they tend to use

Data

- Panel A: Categories of Moneyness
- Panel B: Categories of times to expiration
- Foreign Investor trade most activate in OTM option

Table 2
Open-buy positions, by different option types and different classes of investors.

Variables	Domestic institutional investors		Foreign institutional investors			Individual investors		Market makers	
	Call	Put	Call	Put	Put	Call	Put	Call	Put
<i>Panel A: Moneyness</i>									
Above 10% OTM	2.96	2.31	2.04	7.34	2.40	2.70	3.53	3.39	
3-10% OTM	32.47	35.33	39.63	45.23	28.91	30.55	32.88	34.36	
Near-the-money	61.19	59.47	56.96	46.29	66.87	65.63	58.15	58.82	
3-10% ITM	3.18	2.70	1.24	0.98	1.79	1.09	5.08	3.24	
Above 10% ITM	0.21	0.19	0.14	0.15	0.04	0.03	0.35	0.18	
<i>Panel B: Time to expiration</i>									
Under 30 days	84.48	75.71	53.11	55.77	84.02	87.28	79.01	77.79	
30-59 days	14.74	23.59	36.24	32.98	15.34	12.23	18.85	19.41	
60-89 days	0.48	0.43	6.76	7.05	0.44	0.28	1.22	1.79	
90-179 days	0.26	0.22	2.28	2.31	0.16	0.12	0.57	0.57	
Above 179 days	0.03	0.05	1.62	1.90	0.04	0.09	0.34	0.44	

Empirical Specification

- Using the following regression :

$$R_{it+\tau} = \alpha_i + \beta_i X_{it} + \gamma_i Control_{it} + \epsilon_{it+\tau}$$

where

R represent TAEX returns.

X represent the Information variable

Control represent the control variable

- Information variable (put call ratio combines information of put and call volume):

$$X_{it} = \frac{P_{it}}{P_{it} + C_{it}}$$

Empirical Specification

- Decomposing private information
(which group of traders possess superior information)

$$R_{it+1} = \alpha_i + \beta_i^{DI_s} X_{it}^{DI_s} + \beta_i^{FI_s} X_{it}^{FI_s} + \beta_i^{I_s} X_{it}^{I_s} + \beta_i^{M_s} X_{it}^{M_s} + \epsilon_{it+1}$$

- Decompose various investor class into group of moneyless, time to expiration.

$$R_{it+1} = \alpha_i + \beta_i^M X_{it}^{FI_s \& M} + \epsilon_{it+1}$$

Result

$$R_{it+\tau} = \alpha_i + \beta_i X_{it} + \gamma_i Control_{it} + \epsilon_{it+\tau}$$

Table 3

Predictability of the overall option volume.

+ τ Days ahead	Open-buy put-call ratio		Open-interest put-call ratio	
	Slope coefficient	t-Statistic	Slope coefficient	t-Statistic
1	36.30	0.77	5.90	0.14
2	-7.33	-0.17	-29.00	-0.70
3	24.50	0.58	6.13	0.15
4	-31.90	-0.77	-28.40	-0.68
5	-28.10	-0.70	-28.60	-0.69
6	-26.40	-0.68	-29.90	-0.72
7	-102.70 ^{***}	-2.81	-84.90 ^{**}	-2.05
8	-58.20 [*]	-1.67	-69.00 [*]	-1.66
9	-85.60 ^{**}	-2.58	-108.20 ^{***}	-2.62
10	-65.30	-2.09	-40.40	-0.97
11	-5.14 [*]	-0.17	25.70	0.62
12	-50.90	-1.81	-38.50	-0.93
13	-35.20	-1.32	-14.00	-0.34
14	-16.20	-0.64	2.32	0.06
15	1.20	0.05	5.85	0.14
16	-18.70	-0.80	-11.90	-0.29
17	-15.40	-0.67	10.00 ^{**}	0.24
18	-14.90	-0.67	-87.20	-2.11
19	-8.49 [*]	-0.40	-29.90	-0.73
20	-37.40	-1.80	-19.30	-0.47

- In aggregate case
- No predictability within one week
- Leading 7,9,18 days has predictability

Result

- Foreign Institutional Investors provide strong predictive power

Table 4

$$R_{it+1} = \alpha_i + \beta_i^{DI_s} X_{it}^{DI_s} + \beta_i^{FI_s} X_{it}^{FI_s} + \beta_i^{I_s} X_{it}^{I_s} + \beta_i^{M_s} X_{it}^{M_s} + \epsilon_{it+1}$$

Predictability from plain regressions.

Intercept	Domestic institutional investors	Foreign institutional investors	Individual investors	Market makers	R ²
-0.93 (-0.84) ***	24.60 (1.24)	-	-	-	0.16
28.90 (2.70)	-	-35.50** (-2.31)	-	-	0.71
-10.70 (-0.60)	-	-	35.90 (0.81)	-	0.07
-21.60 (-1.54)	-	-	-	47.00 ^x (1.86) _↓	0.35
-49.70 (-1.22)	11.10 (0.45)	-36.20** (-2.29)	111.30 (1.53)	58.40 (1.80)	0.87

Result

- Add control variable to further investigate foreign investors.
- Foreign Institutional Investor still has strong predict power.
- These control have no impact on next day return.

Table 5

Predictability from foreign institutional investor regressions with control variables.

Intercept	Put-call ratio	Dummy × near maturity put-call ratio	Volume	$R_{5,1}$	R_{-1}^{Nasdaq}	R^2
34.30 ^{***} (3.13)	-50.10 ^{***} (-3.12) _{***}	46.00 (1.28)	-	-	-	1.68
31.80 (0.16) _{***}	-50.20 (-3.11) _{***}	46.00 (1.28)	0.17 (0.01)	-	-	1.68
34.90 (3.16)	-50.70 (-3.15) _{***}	44.00 (1.22)	-	-102.50 (-0.54)	-	1.73
1.87 (0.01)	-50.90 (-3.15) _{**}	44.00 (1.21)	2.20 (0.17)	-111.30 (-0.57)	-	1.73
49.80 (0.26) _{***}	-35.50 (-2.31) _{**}	-	-1.38 (-0.11)	-	-	0.71
29.20 (2.72)	-35.80 (-2.32) _{**}	-	-	-61.60 (-0.34)	-	0.73
32.10 (0.16) _{**}	-35.80 (-2.32) _{**}	-	-0.19 (-0.01)	-60.80 (-0.32)	-	0.73
26.40 (2.44) _{***}	-31.70 (-2.03) _{***}	-	-	-	539.00 (1.32)	0.94
31.20 (2.78)	-45.30 (-2.76) _{***}	46.40 (1.29)	-	-	619.00 (1.35)	1.95
58.10 (0.30) _{***}	-45.10 (-2.73) _{***}	46.40 (1.29)	-1.79 (-0.14)	-	626.20 (1.36)	1.96
31.80 (2.82)	-45.80 (-2.78) _{***}	44.10 (1.22)	-	-121.50 (-0.64)	640.00 (1.39)	2.01
25.60 (0.13)	-45.90 (-2.77)	44.10 (1.22)	0.41 (0.03)	-123.10 (-0.62)	638.60 (1.38) _{**}	2.01
54.60 (0.27)	-	44.80 (1.23)	-3.38 (-0.25)	-83.30 (-0.42)	919.00 (2.03)	0.88

Result

- The strongest information comes from NTM option.
- Domestic Institutional Investors also trade actively in NTM option, but their trade contain insignificant information

Table 6
Predictability with varying option leverage, by different investor classes

Contract type	Domestic institutional investors			Foreign institutional investors			Individual investors			Market makers		
	Intercept	Put-call ratio	Avg. no. of contracts	Intercept	Put-call ratio	Avg. no. of contracts	Intercept	Put-call ratio	Avg. no. of contracts	Intercept	Put-call ratio	Avg. no. of contracts
<i>Panel A: Moneyness</i>												
Above 10% OTM	5.62 (0.58)	2.14 (0.17)**	154	14.10 (0.84)	-11.90 (-0.62)	828	-1.28 (-0.15)	7.94 (0.69)	1291	4.73 (0.61)	-2.54 (-0.24)**	948
3-10% OTM	-13.70 (-1.48)	32.00 (2.18)	1308	16.10 (1.54)***	-18.30 (-1.33)***	3053	0.20 (0.02)	6.85 (0.35)	14,752	-21.30 (-1.93)	44.20 (2.43)	8369
Near-the-money	9.55 (1.08)	-15.20 (-0.92)	2261	27.40 (3.14)	-36.10 (-2.74)	3670	-20.90 (-1.35)	64.90 (1.63)	33,207	-2.16 (-0.18)	9.92 (0.49)	14,474
3-10% ITM	-0.51 (-0.07)	16.80 (1.43)	133	-7.21 (-0.67)	17.60 (1.01)	171	-2.57 (-0.39)	19.70 (1.26)	768	4.86 (0.69)	-4.07 (-0.33)	1023
Above 10% ITM	4.34 (0.47)	-3.58 (-0.20)	24	-9.73 (-0.62)	41.20 (1.51)	52	6.54 (1.14)	0.52 (0.04)	25	2.42 (0.39)	12.80 (1.16)	86
<i>Panel B: Time to expiration</i>												
Under 30 days	-5.98 (-0.55)	21.60 (1.07)	3146	19.90** (2.02)***	-20.50 (-1.47)***	4285	-11.50 (-0.55)	39.70 (0.91)	45,102	-16.30 (-1.24)	38.90* (1.65)**	20,528
30-59 days	11.50 (1.30)	-15.40 (-1.08)	991	30.40 (2.93)	-39.10 (-2.74)**	2957	8.54 (0.92)	-26.20 (-1.03)	8044	-21.50 (-1.88)	41.90 (2.22)	5363
60-89 days	8.67 (1.09)	-10.90 (-0.79)	53	22.90 (1.95)	-33.60 (-2.12)	920	9.08 (1.19)	-20.70 (-1.10)**	265	6.43 (0.63)***	-5.17 (-0.35)***	529
90-179 days	1.93 (0.20)	-12.00 (-0.63)	34	1.25 (0.11)	-7.95 (-0.52)	382	-11.30 (-1.53)	39.80 (2.43)	96	27.10 (3.12)***	-39.60 (-3.09)***	202
Above 179 days	10.10 (0.68)	14.30 (0.56)	18	4.94 (0.34)	-14.40 (-0.75)	352	3.12 (0.38)	0.26 (0.02)	46	25.50 (2.63)	-31.70 (-2.31)	175

Conclusion

- Only foreign institutional investor has significant predict power in TAIEX option market
- Informed trader provide the largest predictability in NTM option, middle horizon option.