NARROW FRAMING: PROFESSIONS, SOPHISTICATION, AND EXPERIENCE

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Tversky and Kahneman (1981) first introduce decision framing by providing experimental evidence, and they suggest that people tend to simplify complicated phenomena into easily understandable outlines.

➔ Narrow framing results partly from the formulation of the problem, the norms, habits, and personal characteristics of the decision maker.

Traders in an options market frame complicated investment decisions into simpler ones supporting the narrow framing effect.

The combination of investors' sophistication and trading experience can alleviate a disposition effect in financial markets. (when investors become more experienced, the disposition effect is reduced, and portfolio performance improves)

❖ OBJECTIVE :

To investigate investors' decision making in trading options using a unique options and futures dataset. We focus on whether professionals' sophistication and experience help to reduce narrow framing in decision-making.

Our study is an attempt to provide evidence on whether narrow framing is pervasive across different types of investors (including professionals), and whether experienced and/or sophisticated traders will exhibit broader framing traits.

❖ DATA USED :

We classify 5 groups of traders based on their occupational categories :

- individual traders (INDIVs)
- local companies (LOCALs)
- qualified foreign institutional investors (QFIIs)
- securities investment trust, and consulting enterprises (SITCs)
- dealers, brokers of futures commission merchants, and securities firms (DBs)

Sophisticated traders are measured as those options traders who execute combination orders and futures.

TABLE I
Summary Statistics of the TAIFEX Options Market

	ALL	*INDIVs*	*LOCALs*	*QFIIs*	*SITCs*	*DBs*
Number of traders	248,952	247,445	439	91	867	110
Number of contracts	19,648	18,672	2,670	2,527	1,532	6,241
Average daily number of trades per trader	3.573	3.425	12.384	140.658	17.188	81.126
Average daily trading volume per trader	15.823	14.477	115.910	1,465.184	86.390	888.308

We used the degree of TC as a proxy for the degree of narrow framing to investigate investors' trading behavior in the Taiwan derivatives market.

We obtained options and futures data from the Taiwan Futures Exchange (TAIFEX) between 24 December 2001 and 31 December 2007 (= 1,495 trading days). 248,898 traders trading in the options market, excluding traders who executed <= 3 trades.

The last trading day and the expiration day are the third Wednesdays and Thursdays of each respective month. Trading hours are 08:45a.m.–1:45p.m. Taiwan time, Monday through Friday.

The contracts are :

- Taiwan Stock Exchange Capitalization Weighted Stock Index (TAIEX) options,
- Taiwan Stock Exchange Electronic Sector Index options,
- Taiwan Stock Exchange Finance Sector Index options,
- MSCI Taiwan Index options,
- Taiwan Stock Exchange NonFinance/NonElectronics Sub-Index options,
- GreTai Securities Market Capitalization Weighted Stock Index options.

(All of option contracts are European style options).

Our data include identifiers for the traders' ID codes, whether the trade was a buy or sell, the price, the volume, and the time for each transaction.

❖ HYPOTHESIS:

Hypothesis 1: individual traders are more susceptible to narrow framing (because Traders' professional trading abilities are negatively correlated with the degree of narrow framing).

➔ We expect to see in our empirical results that the least professional INDIVs exhibit the narrowest degree of framing, and the most professional DBs exhibit the broadest degree of framing

Hypothesis 2: Sophisticated investors show less narrow framing.

Kumar and Lim (2008) also suggest that the three proxies for individual investors' sophistication: foreign assets trading, short-selling, and option trading are positively correlated with broad framing.

➔ We predict that traders who submit combination orders and trade in the futures market are sophisticated and exhibit less narrow framing.

Hypothesis 3: Investors with more trading experience exhibit less narrow framing.

We measure trading experience by the variance of purchase dollar amounts, the number of purchases divided by investors per trading period, and the number of different options purchased divided by investors per trading period.

❖ METHOD :

Narrow framing measures : TC and the index of cluster size (ICS) measure.

$$TC_i = 1 - \frac{NODAYS_i}{NOTRADES_i}$$

$NODAYS_i$: total number of days on which investor i trades options or futures
$NOTRADES_i$: total number of option trades executed by investor i during the sample period.

If the TC measure = 0, then investor i is more susceptible to narrow framing.
If the TC measure > 0, then investor i is more susceptible to broad framing.

$$ICS_i = \frac{Var_i(NT_{it})}{E_i(NT_{it})} - 1$$

NT_{it} : number of option trades executed by investor i on day t.

➔ *$E_i[NT_{it}]$ and $Var_i[NT_{it}]$ are estimated using all trades executed by investor i during sample period.*

The "narrow framing traders" in the lowest ICS quintile tend to exhibit the highest degree of narrow framing.

To capture option characteristics, we also controlled :

- Front month ratio = N_{t1} / $Total\_N_t$

N_{t1} = number of trades of options contracts within one month of expiration executed by an investor during the whole sample period.

$Total\_N_t$ = total number of trades of options contracts executed by an investor during the whole sample period.

- Near the money ratio = $N_{near\text{-}the\text{-}money}$ / $Total\_N_t$

$N_{near\text{-}the\text{-}money}$ = number of trades of option contracts which are near-the-money executed by an investor during the whole sample period.

- Call ratio = $| N_{call}/N_t - 0.5 |$

N_{call} = number of trades (trading volume) of call option contracts executed by an investor during the whole sample period.

If Investors have preferences only in calls or puts : Call ratio = 1.
If they trade calls and puts at about an equal rate : Call ratio = 0.

- Dumfut = dummy variable : 1 if traders trade in both option and futures markets, 0 otherwise.
- Dumc = dummy variable : 1 if traders have submitted combination orders in an options market, 0 otherwise.

We predict that : Front month ratio, Near the money ratio, Call ratio will be negatively related with TC, and Dumfut, Dumc are positively related with TC.

We use three variables in our proxy experience :

- Experience1 = Log(Var(purchase dollar amounts))
- Experience2 = number of purchases / investor trading period
- Experience3 = number of different option contracts purchased / investors per trading period

Theses 3 variables will all be positively related with TC, meaning traders with abundant trading experience can alleviate narrow framing effects.

❖ RESULTS :

We found that about 20% of traders in the options market have a TC = 0 → Such investors are susceptible to a severe degree of narrow framing.

Comparing narrow framing among groups of traders, the % of to have a TC = 0 was : 11.7% (INDIVs), 8.2% (LOCALs), 11.0% (QFIIs), 9.3% (SITCs) and 4.5% (DBs)

→ individual traders have the greatest propensity for narrow framing.

The mean values of TC for professional traders such as QFIIs, SITCs, and DBs were larger than those of INDIVs and LOCALs

→ consistent with hypothesis 1.

Moreover, for QFIIs, SITCs, and DBs have a TC >= 0.5

→ these 3 types of traders are inclined to a broader degree of framing in their investment decisions.

➢ <u>What kind of option contracts do investors prefer to trade?</u>

Mean (Front month ratio) = 0.875 *(traders execute 87.5% of the trades that belong to front month contracts)* → traders in option markets trade front month contracts quite often.

Mean (Near the money ratio) = 0.785 → traders in option markets prefer to trade near-the-money contracts.

Mean (Call ratio) = 0.216 → traders in option markets do not trade call/put contracts to such a great degree.

We also explore for sophistication and experience effects using the 3 experience proxies :

- Mean (Experience1) = 17.22 → the average variance of purchase dollar amounts/trader is 1017.220.
- Mean (Experience2) = 0.517 → an option trader executes 5.17 purchases over a ten-day trading period.
- Mean (Experience3) = 0.130 →an option trader purchases 1.30 types of different option contracts over a ten-day trading period.

The number of broad framing LOCAL, QFII, SITC, and DB traders is on average greater than the number of narrow framing LOCAL, QFII, SITC, and DB traders.

→ consistent with hypothesis 3.

We used ICS to sort the traders in option markets :

We can find that the ICS quintile of each type of trader was greater if the traders' professional abilities were greater → sophisticated investors exhibit less narrow framing (consistent with hypothesis 3).

The results show Traders' professionalism, sophistication, and trading experience are negatively correlated with the degree of narrow framing → these factors help to reduce investors' behavioral bias.

❖ CONCLUSION :

We demonstrate that the 3 characteristics of profession, sophistication, and experience can decrease narrow framing in an options market.

Our results support that more professional traders exhibit less narrow framing.

Moreover, experienced options traders are susceptible to broad framing (decision makers will improve their behavioral biases by learning from their previous errors).